

1. It is a pleasure to be here at the Royal Botanic Garden of Edinburgh to launch Scotland's Soils website and to present a progress report on the Scottish Soil Framework.
2. In 1670, the Garden was founded by Dr Robert Sibbald and Dr Andrew Balfour in Holyrood Park on a patch of ground no bigger than a tennis court.
3. It began life as a physic garden, for the cultivation of medicinal plants. Since that time, the Garden has not only moved to this site, but grown into an institution with an international reputation in botanical and conservation sciences.
4. Now, as then, the Garden relies on the quality of its soil to ensure that success. The wider successes of Scotland as a nation, from the crops we grow, to the stunning landscapes and fine water quality we enjoy, are all based on that same soil resource.
5. RBGE staff underpin conservation and biodiversity efforts in more than 40 countries around the world, exporting and sharing their knowledge globally.
6. The website that I am pleased to be launching today will also allow our citizens and those living further afield to share and use decades of data collected on Scottish soils, undertaken by our research institutes and public bodies.
7. Scotland's soils are a vital asset, quite literally the foundation upon which much of our economy is built, and their management and protection is essential for the future.
8. The website launched today puts that information into everyone's hands, and in doing so it will help all of us better understand and plan our use of soils with care.
9. Soils are often taken for granted, but we should recognise their economic contribution and the other benefits they provide to society. You can see why my predecessor, Roseanna Cunningham, in the Ministerial foreword, identified soils as vital to the Scottish Government's prime objective of sustainable economic growth, and established the Scottish Soil Framework.

10. The vision of the Scottish Soil Framework was that soils are recognised as a vital part of our economy, environment and heritage, to be safeguarded for current and future generations.
11. Soils are at the heart of all life: they cover most of the natural terrestrial world, and it is recognised that soils also mean different things to different people. For example, they literally provide the ground on which our buildings and roads stand.
12. The important services that soils provide for us all include the provision of such basics such as food, forestry and other biomass production. Looking forward, we can see that they have potential to help us to lock up carbon from the atmosphere for years to come.
13. Scotland's soils contain over 3,000 million tonnes of carbon, which is over half of the UK total of terrestrial carbon. Of this peatlands account for 1,600 million tonnes. If we were to lose 1 per cent of the carbon in our peatlands as carbon dioxide in a year, it would double our national greenhouse gas emissions.
14. It is therefore important that we safeguard our peatlands, which have multiple benefits—including biodiversity and flood risk management.
15. The Intergovernmental Panel on Climate Change (IPCC) has published draft Technical Guidelines under which we will be able to register the carbon savings that we can attribute to peatland restoration. The details of Wetland Management in the LULUCF provisions are complex, but we are planning to take it into national emissions accounting.
16. In the second Report on Policies and Proposals (RPP2) this year, we are proposing the restoration of 21,000 hectares a year of damaged peatlands. We are now developing a national plan for the protection of peatlands, and we have allocated £15m in the next two years for the restoration of peatlands.
17. Agriculture accounts for some 20% of Scotland's greenhouse gas emissions, and on current projections it will account for a much larger proportion of the residual emissions in 2050.

18. This is why the Scottish Government is leading on the Farming For a Better Climate programme to encourage farmers to adopt measures to improve efficiency. The programme is benefiting from the advice of the agricultural college, SRUC, and is taken forward in consultation with NFU Scotland.
19. There are environmental programmes that should also help reduce GHG emissions from Scotland's agricultural soils, notably the Diffuse Pollution initiative and the Nitrates action programme in the nitrate vulnerable zones. Essentially these prohibit farmers from applying fertilisers in excess of the needs of the crops or grasslands.
20. It may be noted that farming accounts for 80% of the emissions of nitrous oxide, a particularly potent greenhouse gas. Continuing improvements in nutrient management can save farmers substantial costs as well as limit the adverse effects that farming can have on the environment.
21. In forestry there has been substantial research related to soils and climate change. The Forestry Standard includes Soils guidelines, and Forestry Commission Scotland has drafted guidance on the options for managing deep peat clearfell sites.
22. Scottish Water have created a Sustainable Land Management Incentive Scheme. This provides support for measures to reduce the risk where areas of degrading peat may affect water treatment processes and drinking water quality.
23. It is evident that these varied functions of soils are fundamental to sustainable economic growth. Scotland's soils are generally in good health, in large part because of canny management over many years by farmers and foresters and protection by planners and other regulators.
24. But despite those efforts, significant threats remain, both nationally and locally.
25. Those threats include:
 - a. loss of organic matter, particularly soil carbon;
 - b. soil erosion, which is a loss of valuable topsoil and often a threat to the water environment; and

- c. construction leading to soil sealing, which represents a loss of agricultural potential and an increased risk of damage due to flash flooding.

26. The Scottish Soil Framework was intended to bring together a number of disparate strands of activity relating to soils. There were several policies that were providing some direct or indirect protection of soils. But there was no overarching policy and no one legislative or policy tool developed with the protection of soils in mind.
27. Establishing the Framework has seen the Scottish Government, working with land managers, agencies and other partners, promote the sustainable management and protection of soils, consistent with the economic, social and environmental needs of Scotland.
28. I am therefore delighted to be publishing today a Progress Report on what has been achieved in the four years since the Framework was published. We have made progress on nearly all of the 39 identified actions, and thus made progress on all 13 Soil Outcomes.
29. In short, there has been a considerable increase in soils awareness and in co-ordination between the various bodies interested in soils, especially the public bodies, SNH, SEPA and the Forestry Commission. An enduring and precious resource such as soil requires our attention now and in the longer term.
30. Our successes - rising demand for locally produced Scottish food, increasing infrastructure development, forestry cover and renewable energy production - can also have consequences for soils, and so our need for good, well informed stewardship has never been greater.
31. In contrast to water or air, for which national long-term datasets exist, there is a lack of national trend data on soils. This makes it difficult to provide evidence of change or damage to soils.
32. However, we have in the National Soil Archive, held at the James Hutton Institute in Aberdeen, one of the best soil reference collections of any country in the world. We also

have access to data and information collected by agencies such as Forestry Commission Scotland, SEPA and SNH, as well as that collected by the Hutton.

33. Given that access to soils information was relatively poorly developed, the Soils Framework recommended that public awareness of soils and the more ready access to soils information were desirable ambitions.
34. The Scottish Government, as well as funding soil science and data collection, such as the re-survey of the National Soils Inventory of Scotland, has funded the Scotland's Soils website project, and today we are delivering on that ambition.
35. This website will help us all to better understand our soil resource, as a first step to its better management.
36. Scotland's Soils website aims to be a source of authoritative and scientifically robust data and information, which will grow and develop as new material becomes available over time.
37. Soils research in Scotland continues to be a strength. It addresses important areas such as: the role of soils in delivering a range of ecosystem services; the effects of different soil management practices on soil quality and crop production; protecting soil organic matter and reducing greenhouse gas emissions from soils; protecting soil biodiversity; soils' contribution to sustainable flood management and enhanced water quality.
38. The results of this research are also being used in the design of tools and 'apps' at The James Hutton Institute to equip farmers, land managers and other interested parties to make informed decisions about sustainable soil management – or you may simply want to find out more about what type of soil is in your garden.
39. Improved access to public sector data – including making data open and available for re-use - is a key commitment of the Scottish Government. We want to see data we hold, or provide funding support for, put to as many uses as possible to deliver better outcomes for the people of Scotland.

40. Digital delivery of information about the environment we all enjoy is for today, and for the future.
41. This new website capitalises on the excellent research resources of Scotland, making our investment in science available to all our citizens, helping them understand their environment and perhaps stimulating and inspiring the next generation of soil scientists to help look after this vital resource into the future.
42. Later this week I will attend the Environment Council in Brussels. Europe is an important driver of protecting our environment, both at home and through reducing potential transboundary pollution.
43. At present we have no voice to influence that discussion directly. Independence would give us that voice; a chance to take a full part in that debate and demonstrate Scottish leadership.
44. Today's website launch is an example of innovative thinking and working: a practice I know others will be keen to observe.
45. Whatever the outcome of next year's Referendum or of any future Referendum, our soils will still be with us, providing economic and ecological services to our people. And there will be a Scottish Government that recognises the importance of soils, of soil protection and of good, accessible soils information.
46. As we approach the end of the Year of Natural Scotland, we can see more clearly than ever that soils are essential to land use, to environmental protection and to the diversity of our distinctive wildlife.
47. Scotland's Soils website will contribute to a better understanding of the soil environment and to improving the management of our soils.
48. This new website should stimulate and inspire the next generation of soil scientists to help look after this vital resource into the future.