The commission wants to scrap binding national renewable-energy targets and introduce a mere aspirational goal for the EU as a whole. This has led some critics to infer a Brussels-conspired counter-revolution in climate policies, which they say will deal a blow to Europe's emerging renewable industry and open the door to a renaissance of nuclear power on the continent. But the commission's proposal has more teeth than its critics would like to admit.

According to state-of-the-art energy-economy models, 40% emissions cuts by 2030 are achievable at reasonable cost and, provided sound investment is made in energy research, do keep Europe on track to cut emissions by at least 80% by mid-century.

Announced just as Europe is surfacing from the most severe economic downturn since the Great Depression, the cost efficiency of the plan is essential to its chances of success. To burden member countries with excessive environmental measures at this time could do more long-term harm than good. An economically weak, socially struggling region is unlikely to produce the wealth and creative power that will be needed to achieve the great transformation to a low-carbon civilization.

That transformation is a global task. With the EU accounting for little more than 10% of global greenhouse-gas emissions, the bulk of the effort will need to be accomplished elsewhere. But although the focus of global climate policies is increasingly shifting to the world's rising economies — and to China in particular — both the timing and the content of Europe's latest promise on global warming could be essential to building political momentum.

With a view to the United Nations climate talks next year in Paris, where nations hope to replace the underachieving 1997 Kyoto Protocol with a more stringent global climate agreement, the EU's bid is a clear and unambiguous signal. What Brussels has dished up well in advance of the Paris climate gala is a polite but firm invitation to the rest of the world, and one that governments from Beijing to Washington cannot lightly afford to ignore. By the end of the year, at the latest, the EU's main economic competitors will be expected to lay on the table solid offers for that crucial round of negotiations.

In terms of the magnitude of emissions cuts, the EU's unilateral proposal is an indication of the minimum level of commitment other developed nations can be expected to make if they take their climate-change responsibilities remotely seriously. But governments — including those of EU member states — must be reminded that gentle pathways to decarbonization such as the EU hopes to follow are by no means a guarantee of a benign future climate. In fact, even the more optimistic scenarios currently under debate would give the world at best a 50% chance of staying below 2 °C of warming, the often-cited threshold to dangerous climate change. The science strongly suggests that reducing this probability to a tolerably small value would require global emissions cuts at least twice as high as those proposed in Brussels last week.

"Europe's latest promise on global warming could be essential to building political momentum."

The question of how the substantial global cuts that might be required to safely stay below 2 °C of warming should be apportioned between rich and poor countries is one that science alone cannot answer. This issue requires input from ethics and the theory of justice as much as it does from science and empirical economics. The EU's latest climate aspirations, whether or not one considers them sufficient, are a timely reminder of the intricacies of the issues at stake. ■

Crystal clear

Celebrating the many achievements of crystallography.

In one of the more bizarre examples of science outreach, the website starnostar.com gives readers the chance to vote on who should win a popularity fight between the physicists Max von Laue and Paul Dirac (see go.nature.com/fw1omn). To the non-expert, there is not much to go on; the website biographies offer brief details on the physicists' birth places and their sign of the zodiac, but nothing on their achievements, popular or otherwise. (Dirac currently leads, with 69% of the vote, but don't despair, von Laue fans; the contest remains open, and a surge in support could yet tip the balance.)

Itching to pitch in to help choose between two of the greatest minds of the twentieth century, but unsure about their true credentials? Read on.

"In the right corner, Max." A friend of Albert Einstein and a student of Max Planck, von Laue (a Libra) is the rugged outdoors type. He discussed his Nobel-prizewinning idea that X-rays passing through a crystal would bounce around to form an identifiable signature while skiing. Skiing! He was brave as well — he stood up to the Nazis in his native Germany and helped Jewish colleagues to escape the country. He won a Nobel prize, and earns bonus points for the rip-roaring boys'-own tale of how the gold award was dissolved to hide it during the war, and then later recast.

"In the left corner, Paul." An awkward man and a sensitive soul, Dirac lived for his work and had little time for small talk, or for much else. But what work it was. His mathematical wizardry unlocked the secrets of quantum mechanics and quantum electrodynamics. He won a Nobel prize too, aged just 31! And for all you anti-establishment British types, he refused a knighthood. (He did not want to be known by his first name.)

Still undecided? Then take a look at a special collection of articles that begins on page 601, and a research paper on page 657. More than a century since von Laue's moment of inspiration on the slopes, and exactly a century since his Nobel prize, 2014 is the International Year of Crystallography. There are a lot of such celebratory years these days. But indulge us, and the organizers, who want to shout about the achievements and contributions of X-ray crystallography. Crystallographers deserve the chance — too often in the background when the spotlight falls on scientific accomplishment, like one of their refraction patterns, it is worth piecing together their separate successes to build a coherent image of the whole.

Such anniversaries and commemorations inevitably cast the eye and the mind backwards in time. But as this week's special collection makes clear, crystallography remains a cutting-edge field, and one that, if harnessed properly, could contribute as much in the next 100 years as it did in the previous 100. The development of the X-ray free-electron laser, for example, is a monumental technical achievement, and one that seems more suited to the world of 2114 than 1914, or even 2014.

Dirac's work continues as well. On page 657, physicists describe the first creation of something he predicted in 1931 — a magnet with a single pole: the Dirac monopole. A triumph of a growing research field called quantum simulation, which exploits real quantum systems to model others that are difficult to achieve, the research shows that not all magnets need have opposing 'north' and 'south' poles. Now that they know such a thing is possible (see the News & Views article on page 627 for more), physicists will continue to search for them with a spring in their step. As Dirac said: "one would be surprised if Nature had made no use of it."

Back to starnostar. To choose between Dirac and von Laue, of course, is to be forced to select either the north pole or the south pole of a magnet. As Dirac and von Laue, and later physicists, show us, we don't need to do that. Each can stand on his own. And much else rests on both. ■

➲ NATURE.COM
To comment online, click on Editorials at:
go.nature.com/xhunqv