As the evidence of global warming proliferates, so do the nasty consequences

WE WERE right, all along. That is the thrust of the latest report from the Intergovernmental Panel on Climate Change (IPCC), a United Nations body set up to pronounce authoritatively on the science of global warming. In 2001 it predicted that global warming would lead to many ills, including greater numbers of extinctions, growing shortages of water, higher incidence of tropical diseases, and lower yields from agriculture, fishing and forestry in some places. Now the scientists who write the reports say they have much stronger evidence that such calamities are indeed occurring—faster, in many cases, than they originally thought.

The previous IPCC report, in February, examined the evidence that the globe was actually warming. It called the trend “unequivocal”, and expressed “very high confidence” that it was largely man-made. The new report assesses the likely impact of global warming. It was released on April 6th, after a week of negotiations between scientists and governments over the wording. Representatives of China, Russia, Saudi Arabia and America in particular were said to have tried to water down the report, prompting a last-ditch all-night haggle.

The resulting document predicts the same sorts of consequences as its predecessor did in 2001, but with much greater confidence and precision, says Camille Parmesan, a professor at the University of Texas who vetted part of it. By her count, the chapter on current impacts alone rests on a review of over 1,000 academic studies, most of them already published—compared with about 100 last time around.

In a paper published in 2003, Professor Parmesan concluded that half of all species were already altering their behaviour or shifting their range in response to global warming. Others have found that some 26% of coral reefs have already died as a result of warming waters, and that the remainder will probably disappear if average water temperatures rise by another degree—along with the fisheries and tourism they sustain. In a synthesis of such studies, the report concluded that 30% of species face an increased risk of extinction if temperatures rise by 2ºC (3.6ºF).

This sort of finding suggests that the effects of global warming will be “non-linear”, says Paul Epstein, a
Harvard University professor who has reviewed the entire report. For one thing, most projections of the impact derive from estimates of changes in average temperature. But many of the ill effects hinge on changes in the minimum temperature, which has been rising twice as fast. This trend is particularly strong near the poles, where the climate is changing fastest. Winters no longer get cold enough in many places to kill off different pests and diseases. So noxious species of ants and bees are marching northwards across America, ticks carrying Lyme disease are proliferating in Scandinavia and tropical highlands around the world are witnessing an invasion of mosquitoes carrying malaria, dengue fever and Japanese encephalitis. “The winter is the most wonderful thing that was ever invented for public health,” Dr Epstein says, “and we're losing it.”

Multiple factors will amplify the effects of global warming on agriculture and forestry. Warmer and drier conditions in many places will reduce yields. Meanwhile, pests such as tree-killing beetles and crop-killing fungi will both increase their range and breed more rapidly. And an increasing incidence of extreme weather, be it floods or droughts, will both damage crops directly and nurture species that prey on them. The poor, especially in tropical climes, will be hardest hit by all this, since they have little means of adapting to such changes.

The report is supposed only to inform policymaking, not to direct it. But the point of the frightening statistics about impending water shortages, epidemics and crop failures, says one of the authors, is to jolt politicians into preparing for the coming afflictions. In other words, the report intends to end the debate between those who think mankind’s main effort should be trying to reverse climate change and those who would prefer to concentrate on adapting to its effects. Both strategies, it implies, are urgently needed.