out how to get it right'," he says.

With the cost of sequencing falling with each passing year, the number of sequenced human genomes is now poised to reach into the millions. But researchers can't gain a complete picture of how genes influence disease unless those data are linked to clinical information and different institutions share data with each other.

Researchers are often reluctant to share this hard-won information, however. And on occasion, because of privacy concerns, they are legally prevented from doing so. That blocks scientists' ability to use the world's collective data to find answers to simple questions, such as how often a particular genetic variant is linked to a disease.

The establishment of technical standards for storage and sharing will go part of the way towards making genomic data easier to share and analyse. But the alliance also hopes to surmount some of the legal barriers by establishing how anonymity is handled and what information needs to be kept secure. Institutions that abide by core principles could then share data even if their policies differed in other, less central ways.

Moreover, the alliance wants to encourage the development of tools to allow patients to maintain control over their own medical and genetic data. Harold Varmus, director of the National Cancer Institute (NCI) in Bethesda, suggests that institutions should be able to tag their data so that it is accessible only for certain studies — a step that is "going to be incredibly important", he says.

Some major genomic-medicine projects have signed up to the alliance, but others have not yet joined, and have limited outsiders' access to their data. That is partly to head off privacy and security concerns, but also because the information is such a valuable commodity (see 'Precious data').

In the future, research funders such as the NIH and NCI could induce more projects to join by asking grantees to abide by policies set by the alliance, Collins and Varmus say. The project's success will depend on the alliance convincing organizations that it is worth giving up some control to gain access to a broader universe of data, says Michael Stratton, director of the Sanger Institute. "We're committed to the idea that sharing data will be central to extracting the maximum amount of knowledge for the benefit of humankind," he says. ■

PRECIOUS DATA

A 'global alliance' of research institutes wants to encourage sharing of linked genetic and clinical data, but not all of the major data holders have joined the project.

Project	Enrolled participants	Joined global alliance?
US Million Veteran Program	213,000	No
Vanderbilt University BioVU	165,000	No
Kaiser Permanente Research Program on Genes, Environment, and Health	430,000	No
UK10K	10,000	Yes
Deciphering Developmental Disorders	12,000	Yes

CONSERVATION

Europe reforms its fisheries

Agreement would set catch limits that are in line with scientific advice.

BY DANIEL CRESSEY

The breakthrough came at around 3 a.m. on 30 May in Brussels, after a marathon negotiating session: the European Union (EU) finally agreed to end overfishing in its troubled waters.

Fisheries scientists say that the deal, which is expected to be approved before the end of the year, could allow fish stocks to recover to their previous bountiful levels, after being driven down by years of overfishing. But short-term restrictions are likely to bring unemployment to some fishermen.

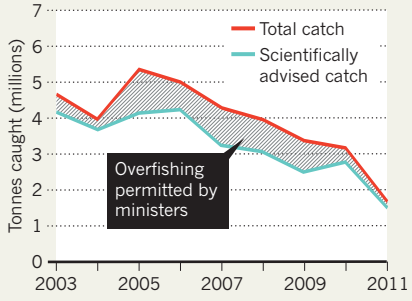
"There is bound to be some short-term pain," says Michel Kaiser, who studies fisheries at Bangor University, UK. "This reform has come about because there was a groundswell of realization that what we had before couldn't go on."

The deal places scientific advice at centre-stage in determining catch limits, as the EU commits to fishing at healthy levels by 2015 "where possible" and by 2020 otherwise. New rules will also be phased in to reduce ecologically damaging 'discards' — the practice of throwing fish caught in the pursuit of other species back into the sea, with the vast majority dying in the process.

For years, scientists have warned that more fish were being caught than was sustainable, owing to a flawed 'Common Fisheries Policy' (CFP), which governs commercial fishing in European waters. Government ministers set higher catch limits for cod, haddock and some other species than scientists considered wise (see 'A waning haul').The latest agreement, which has been several years in the making, is backed by the three arms of European government: the commission, parliament and council.

A WANING HAUL

European ministers have consistently ignored scientific advice in setting catch limits for 107 fish stocks in the northeast Atlantic fishery.



SOURCE: WWF, EU

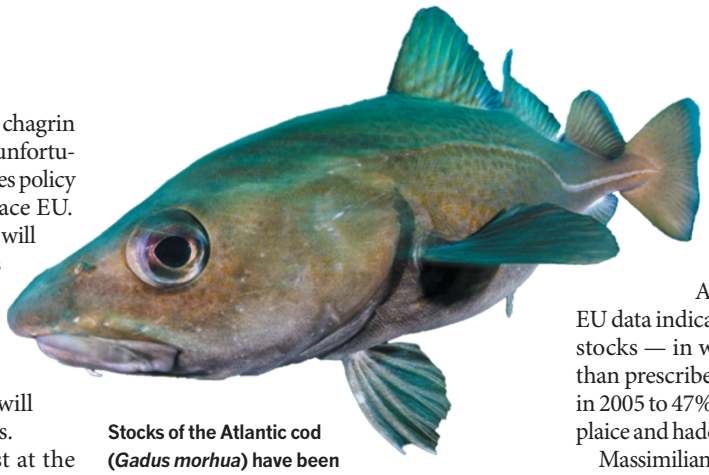
Parliament had been pushing for a thorough reform of the CFP to put catches in line with what science says is sustainable, whereas the council — made up of ministers from EU member states — had been less amenable to radical change.

Environmentalists are generally pleased with the deal's main thrust: a commitment to fishing at maximum sustainable yield (MSY), the largest catch of a particular species that can be taken indefinitely without harming the main population. Scientists have two measures for MSY, obtained using mathematical models created with data from catches by commercial and research vessels: the overall biomass of a species needed to maintain MSY (B_{MSY}) and the annual amount of fish taken from that species that will still allow the species to reach B_{MSY} (F_{MSY}). Fishing at a higher level than F_{MSY} means the fishing is unsustainable in the long term. Environmentalists prefer B_{MSY} to F_{MSY} as a target, because reaching the former would show that a stock has actually recovered, whereas fishing in line with the latter indicates that a stock is on the road to recovery.

The EU agreement would set catch limits at F_{MSY} by 2015 where possible, and by 2020 in other cases. It has also promised to move to ▶

B_{MSY}, but without a firm date, to the chagrin of conservationists. "That's one of the unfortunate things," says Saskia Richartz, fisheries policy director for Brussels-based Greenpeace EU. Richartz also worries that EU ministers will have the final say in setting catch limits and may not stick to the science. "It now says in the text very clearly [ministers] must stick to scientific advice," says Richartz. But "it remains hope rather than certainty" that ministers will honour the F_{MSY} targets set by scientists.

Rainer Froese, a marine ecologist at the GEOMAR Helmholtz Centre for Ocean Research in Kiel, Germany, is also not entirely pleased with the agreement. He says that the council has won a loophole in the 'discard ban', in that some fishermen will still be able to throw back up to 5% of their catches. Critics also say that the 5% exemption will make excessive discarding difficult to enforce, because it will be hard to prove that fishing operations, caught in the act of throwing animals back into the sea, are exceeding their quota.



ALEX MUSTARD/NATUREPL.COM

Stocks of the Atlantic cod (*Gadus morhua*) have been decimated in recent years.

Froese also worries about the willingness of member states to set catch limits in line with F_{MSY}, and says that there will be pressure on scientists to increase their estimates of F_{MSY} in a way that benefits the industry. His own research suggests that the fisheries for some stocks, such as the North Sea cod, will need to be closed altogether for several years before the population can recover.

Other experts are more positive about the reform, and note that catches in recent years have already moved closer to scientists' advice. There are even signs that some northeast Atlantic stocks are bouncing back: EU data indicate that the number of overfished stocks — in which more animals are caught than prescribed by F_{MSY} — dropped from 94% in 2005 to 47% in 2012. Some stocks of herring, plaice and haddock are now fished at F_{MSY} levels.

Massimiliano Cardinale, a fisheries researcher at the Swedish University of Agricultural Sciences in Lysekil, says that although some stocks are recovering, the big challenge will be recovering the over-exploited and commercially important top predators such as cod and tuna. Bringing them back would reshape entire ecosystems off Europe's coasts, he adds.

This will not happen by 2015, and probably not by 2020, says Cardinale, but with a bit more time "the ecosystem might look more like it should do". ■

WORLD HEALTH ORGANIZATION

Agency gets a grip on budget

Reforms increase flexibility and shift spending towards non-communicable disorders.

BY DECLAN BUTLER

Just three years ago, the World Health Organization (WHO) was in deep financial trouble, with a US$300-million deficit. Today the agency's future looks healthier. Last week, the World Health Assembly — the annual gathering in Geneva, Switzerland, of health ministers of the WHO's 194 governing member states — voted in favour of major budgetary reforms that look set to put the agency on a firmer financial footing.

The agency has also taken action to prune and prioritize its work, which critics say has long been spread too thinly. Taken together, the budget and streamlining reforms "are clearly an effort, that is visible and tangible, to get their house in order at multiple levels", says Barry Bloom, a global-health expert at the Harvard School of Public Health in Boston, Massachusetts, and an ardent advocate of WHO reform.

The $3.98-billion budget approved by the assembly for 2014–15 shows zero growth on the WHO's $3.96-billion budget for 2012–13, and marks a slight decrease when inflation is taken into account. The numbers are in line with a worldwide flatlining of spending on global health after a decade of rapid growth that saw much public-health spending shift to new players (see 'Peak health').

This freeze has forced the agency to make some hard choices. The budget breakdown shows a shift away from infectious diseases — with a $72-million cut, taking expenditure down to $841 million — towards work on non-communicable disorders such as cardiovascular disease and cancer. These received a $54-million increase, to $318 million. The changes correct what experts say has long been an inappropriate skew in the organization's budget. They also tie in with UN-wide plans for a global push to reduce the burden of non-communicable diseases, in particular by reinforcing health-care systems in poorer countries where these ills are often neglected. But with no increase in the budget, cuts in some sectors are inevitable if other sectors are to grow.

In a world facing outbreaks of H7N9 influenza in China and a novel coronavirus in the Middle East — both potential pandemic threats — some public-health experts are concerned by a 51% spending cut for

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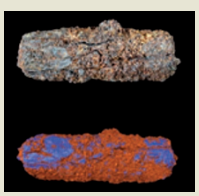

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