Back in 2004, the Suwung landfill site outside Denpasar on the Indonesian island of Bali resembled any other refuse dump in the developing world. Up to 800 tonnes of solid waste were being added daily, edging into urban areas and diminishing the mangroves so beloved of tourist picture postcards. Then, a new source of funding enabled people who had crawled over the waste searching for scrap to sell to be employed sorting organic waste. This, in turn, was tapped for methane that supplied local villages.

The money came from the Clean Development Mechanism (CDM), the global scheme that lets developed nations offset their carbon emissions by funding low-carbon projects in developing countries. This, the first biogas project on Bali, is cited by the UN as one of the shining examples of the CDM.

The CDM is one of the world's two major carbon markets. The other was launched by the EU in 2005, and is known as the Emissions Trading Scheme (ETS). At first glance, the ambition of these schemes looks quite noble: carbon trading imposes a market price on carbon, forcing huge industrial polluters to factor emissions into their business plans; as they do so, they become increasingly aware of the effect of polluting not just on the planet, but on their bottom line. Fossil-fuel guzzling societies not only pay their dues for polluting the environment, they encourage other countries to pursue a path to clean technology.

COMPLEX SYSTEM

Sadly, it hasn't worked out that way. Trading in carbon emissions is fabulously complicated. Bewildering regulations, ambiguous definitions of sustainable development, the vexed issue of verifying and trusting governments to be truthful about emissions, and the uncertain future for carbon trading in the wake of the failed Copenhagen climate talks have created gaping loopholes for sharp practice and outright abuse.

'ETS has created a market, it has created a commodity, but in terms of reducing emissions, it's clear that it isn't working,' says Belen Balanya of Corporate Europe Observatory (CEO), a European environmental research group. 'Companies will only accept something that is beneficial to them. ETS makes government and industry look as though they are doing something, but in fact they haven't been forced into making structural changes. They are continuing as before.'

Even environmentalists, some of whom initially gave carbon trading a degree of wary, if watchful, endorsement, are now almost universally critical. 'ETS has fundamental flaws,' says Sarah-Jayne Clifton, international climate campaigner for Friends of the Earth.

INTS KALNINS/REUTERS

Number of Clean Development Mechanism projects 'bought'
UK: 1,434
Switzerland: 741
Japan: 530
Netherlands: 469
Sweden: 264
Germany: 241
Spain: 165
Denmark: 93
Italy: 88
France: 86
Austria: 83
Canada: 80
Norway: 51
Finland: 46
Belgium: 31
Ireland: 14
Portugal: 9
New Zealand: 1

'Apart from anything else, it has failed to bring down emissions. It hasn't really worked, and it has had plenty of time to try to work.'

Carbon markets were central to the Kyoto Protocol and produced the EU and UN carbon-trading systems that were originally separate and distinct from one another, but since 2008 have overlapped. The trading rights approved at Kyoto established the principle that companies buy allowances that enable them to emit a given amount of carbon dioxide. Governments, or international bodies, issue a limited number of these – notionally less than enough to cover all carbon emissions; companies can purchase these to continue polluting; or sell them if they cut emissions. Over time, the number of permits shrinks, forcing up the price of carbon and making it good business sense to pollute less. In both the EU and UN schemes, one allowance, or certificate, amounts to one tonne of CO_2 equivalent.

The EU's cap-and-trade programme represents around 80 per cent of the global carbon-trading market. ETS aims to cut CO_2 output by at least 20 per cent from 1990 levels by 2020. It seeks to cut carbon emissions among big polluters – chemical, steel and energy plants – by reducing the availability of permits by 1.74 per cent a year. ETS covers around 2.2 billion tonnes of carbon emissions a year, representing around half of EU