

energies (programmes IV, V, VI and VII) take up 12%, environment and resources 10%, reference work 17% and support 13%.

This as the Commission says, means that effectively 70% of the JRC's effort will be devoted to "energy and the environment", with much of the effort in energy concerned with nuclear

safety. The Commission points out elsewhere that the proposals also achieve a better (60:40) balance in the ratio of payroll costs (214.6 muc) to operating expenses (159.8 muc).

The new programme, provided it is adopted in time, will follow on the existing multiannual programme, adopted in 1973, being carried out in

the four JRC establishments at Geel (Belgium), Ispra (Italy), Karlsruhe (West Germany), and Petten (Holland). The large body of the work will be at Ispra. Karlsruhe will take the lead in plutonium fuels and actinide research, Petten will work on high temperature materials, and Geel will coordinate the work on reference methods. □

BRAZIL

● Brazilian engineers have now succeeded in modifying an automobile engine to run on pure alcohol. This could be significant in solving energy problems here, in view of the fact that Brazil imports more than 80% of the crude oil it uses for making petrol. The experimental engine, installed in a Brazilian-made Dodge sedan and demonstrated to government officials in Brasilia, achieved 23 miles per gallon—roughly the same as that model gets with a gasoline engine—and had no trouble keeping up a steady 55 miles per hour in a highway test. The alcohol engine also released far fewer pollutants in its exhaust than a standard engine. Brazil's commerce and industry minister, Severo Gomes, was impressed by the demonstration. He said that if an alcohol engine is produced in volume here, it will be put first in buses and taxis in big cities.

Brazil has the potential to be self-sufficient in alcohol fuel. It is the world's biggest cane sugar grower (sugar is the country's current prime source of alcohol), and it has unmeasured quantities of cassava, a plant whose root provides a basic food for millions of poor farmers and which local scientists say can also be made to yield commercially usable alcohol.

The government's oil refining monopoly, Petrobras, currently dilutes its gasoline by 20% with alcohol, to make imported crude oil stretch further.

● Sao Paulo, Brazil's biggest metropolis (city population: 7 million; including the suburbs: 10 million), also has South America's biggest air pollution problem. A combination of thermal inversion, industrial smoke and automobile exhaust gives Sao Paulo the look of London in the days before anti-pollution measures went into effect in Britain. The air quality in Sao Paulo is often so bad that department stores take out newspaper advertisements for filter masks.

But now local health officials have persuaded the mayor's office and the police to cooperate in a plan called "Operation Winter", which will be put into effect on badly polluted days during the South American winter

(June–September), when pollution-trapping temperature inversion is at its worst in Sao Paulo. The operation has three stages: a warning level, an alert level, and an emergency level when local authorities will prohibit the use of petrol and diesel-powered



vehicles, shut down all factories and prohibit all burning.

This type of action has never before been contemplated in Brazil, where the official line has been that pollution is the price a developing country must pay if it wishes to progress since time spent on its control is time wasted.

● Brazil has been complimented for its progressive laws protecting wildlife and, at the same time, criticised for its inability to enforce them. This is especially true in the vast, underpopulated Amazon region, where it is virtually impossible to control illegal trafficking of protected species of birds and animals.

Occasionally, though, the authorities get results. Police in Rio followed up a recent tip that dogs and cats in a residential neighbourhood had been mysteriously disappearing, and this led them to what apparently is a large-scale contraband ring for exporting Brazilian Amazon creatures such as monkeys, parrots, parakeets, tucans and canaries.

Four persons were arrested on suspicion of running an illegal animal trade to Europe, North America and Japan. The police found hundreds of caged birds and monkeys awaiting shipment out of the country. They also found many dead animals which did not survive flights from the

Amazon city of Belem to Rio. The operators of the smuggling ring apparently had been using local dogs and cats to make food for the captured Amazon animals.

In similar actions, police in Sao Paulo and Fortaleza recently broke up illegal trafficking in songbirds which are protected by wildlife laws. There is a big local demand for many varieties of these popular birds in Brazil, and breeders and sellers seem willing to run the risks to make a profit.

● In another instance of Brazil's finally applying a law that had seemingly existed only on paper before, naval authorities in the north-eastern city of Salvador slapped a fine equivalent to \$25,000 on a local titanium company after a pipe broke at its factory and sent sulphuric acid and ferrous sulphate spilling on to Atlantic Ocean beaches, leaving a brownish stain several miles long in the water. Among the beaches hit was Arembepe, which often is played up in tourist brochures as a Brazilian "unpolluted paradise".

● Brazil's biggest lagoon, Lagoa dos Patos, which is near the country's far southern tip, is becoming so polluted that fish and shrimp are dying *en masse*, and even some farm animals have died of poisoning after drinking water from it. Scientists at the Rio Grande do Sul State Center for Toxicological Studies are not sure, but they think the cause is a sharp increase in the use of DDT and other insecticides on nearby farms. Soybean and wheat production in Rio Grande do Sul have gone up dramatically in recent years, and farmers there traditionally have used large amounts of pesticides.

Fishermen around Lagoa dos Patos say their annual catch in the 3,800-square-mile lagoon is going down steadily. And bird watchers in the region have noticed that the once-common marsh cardinal no longer is seen and that the Patagonian duck does not stop at the lagoon any more on its winter flight north from Argentina.

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