

Science for Environment Policy

Eco-technologies: priorities for the future

Priorities for future environmental technology research and development

were outlined by a study that surveyed experts in the field in 2010-11. The global environmental problems and potential solutions that new technologies could provide were identified and discussed in questionnaires and workshops. One of the main recommendations of the study was for a greater focus on flexible and cost-effective innovations that could alleviate potential environmental issues in countries with developing and emerging economies.

Technologies that provide solutions to environmental problems are one of the fastest growing worldwide markets, reaching a value of [approximately €678 billion](#) in 2013. The term 'environmental technology' includes not only products, but also concepts, techniques and services that could mitigate environmental damage or aid the recovery of already damaged environments.

The researchers identified the most pressing future environmental concerns and promising technological developments through literature reviews, online research, and surveys and workshops with specialists in related areas of industry, academia and policymaking. Seventy-seven technological solutions were identified and grouped within four environmental categories: 20 in climate protection and air pollution control; 18 in soil conservation and biodiversity; 23 in protection of scarce resources and waste management; and 16 in water management.

The questionnaire, which asked participants to rate the level of global and national pressure on environmental issues, and the development needs, market potential and overall importance of selected technologies was completed by 440 specialists involved in environmental technology research, policy and economics. The results of these surveys were then discussed and analysed by a select panel in four topic-specific workshops.

The researchers found that there were perceived to be higher global pressures to act on all of the issues than local pressures. For example, the pressure to act on water management was rated by 91% of respondents as 'very high' or 'high' on a global level, but was similarly rated by only 42% of respondents when asked about pressures specifically within Germany. Another marked discrepancy was in air pollution control, which was rated as 'very high' or 'high' by 67% on a global level, compared with 44% on a local level.

Accordingly, future technologies which aimed to solve the most pressing environmental problems were deemed as those that had the greatest market potential. For industrialised countries, these technologies were in the areas of energy efficient lighting; solutions for building insulation; lightweight materials for construction; and energy efficient drives and waste heat recovery in industrial processes. By contrast, the highest ranked potential technologies in low-income countries were in the areas of water management – in particular, agricultural irrigation and sea and brackish water desalination using renewable energies; cooling and conditioning of buildings; and developing technologies that are focused on adapting to climate change.

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Constraints on the progress of new technologies were listed as 'unsolved technical problems' and 'missing R&D capacities', whereas constraints on established technologies were 'counterproductive political regulations' and 'missing social acceptance'. Additionally, locally important initiatives such as biodiversity monitoring, soil improvement and the reduction of ecosystem fragmentation were said not to be held back by technological limitations, but by a lack of appropriate policy interventions, such as incentive systems, legal structures, and raising public awareness.

There were some notable limitations to the study. Although the survey and subsequent discussions included problems faced by countries around the world, only German-based specialists were consulted. Another caveat was that technologies regarding energy generation, conversion and use were not included, a restriction set by the funders of the study.

The authors noted that high-tech products developed for the European market are often not applicable in emerging and developing countries, and suggested that Europe should concentrate more research funding on exportable environmental technologies to meet the future needs of emerging and developing countries.

They also suggested that future funding should not be predominantly technology-oriented but problem-oriented, therefore supporting inter-departmental work and helping to tackle the broad range of contributing factors to many environmental problems.

