



**Scientific objectives of the second programme of
Cooperation for Academic and Scientific Research
CORUS 2 :**

MAN IN HIS ENVIRONMENT

CORUS (*Coopération pour la Recherche Universitaire et Scientifique*, Cooperation for Academic and Scientific Research) is an original programme developed by the French Ministry of Foreign Affairs (MFA) for the financing of scientific research projects devised and conducted in partnership between academic and research establishments of countries of Africa and the Indian Ocean¹ and their counterparts in France.

This programme follows on from CAMPUS (*Coopération avec l'Afrique et Madagascar pour la Promotion Universitaire et Scientifique*, Cooperation with Africa and Madagascar for the Promotion of Academic and Scientific Research) set up in 1986 by the French overseas development department. Since then, 186 research projects in partnership have been supported in the course of 9 programme approvals corresponding to an overall budget of about 16 million Euros.

Among the different projects of the *Fonds de Solidarité Prioritaire* (FSP) (Priority Assistance Funds) proposed by the MFA, the novelty of the CORUS programme is to give support specifically to leading personnel of universities, *grandes écoles* and research establishments in Africa and the Indian Ocean, by:

- *encouraging training for and by research,*
- *stimulating exchanges and collaboration between scientists from the countries of the South and of the industrial Northern Hemisphere,*
- *financing high quality scientific research work geared to serve development.*

CORUS reinforces the teams and their networks in order to enable them to emerge/enter the international scene.

This call for proposals will support about 50 projects each doted with an average modulable budget of 60 000 Euros for three years.

CAMPUS then CORUS 1, with the same philosophy as CORUS 2, had demonstrated how they met the needs for training and for the development of research in the so-called "field" countries, then in those of the priority assistance zone (*zone de solidarité prioritaire* (ZSP)). The originality and modernity of these programmes show up again in the large international projects nevertheless launched well after the French initiative such as Objectives for the Millennium of the United Nations - 2000 (OMD) or NEPAD (The New Partnership for Africa's Development - 2003).

CORUS 2 fits in as part of this international momentum and has the intention of supporting projects that prove to have a lasting impact, allowing the decompartmentalization of scientific thought by

¹ Eligible countries of Africa and Indian Ocean: South Africa, Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, the Comoro Islands, Congo, Côte d'Ivoire, Djibouti, Eritrea, Ethiopia, Gabun, Gambia, Ghana, Guinea, equatorial Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Morocco, Maurinania, Mozambique, Namibia, Niger, Nigeria, Uganda, democratic Republic of Congo, Rwanda, Sao Tomé-et-Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Chad, Togo, Tunisia, Zambia, Zimbabwe.

associating several teams from different countries of the South (Africa and Madagascar) with one or more French and European teams.

The research proposed will have to contribute to the study of interactions of humans with their environment :

- *physical* (climate, natural hazards, pollution and degradation),
- *biological* (ecosystems and biological diversity, natural resources, health, food),
- *social* (cultural and political aspects) and *economic* (scarcity of resources, population dynamics).

These general objectives clearly interconnect with those of the OMD and NEPAD to promote peace and human rights by ensuring a sustainable form of development, reducing poverty and food insecurity and fighting certain diseases. They necessitate strong and continuous scientific and technological investment and according to NEPAD are considered as one of the keys to development. Regional research projects (Francophone/Anglophone and/or Francophone/Portuguese-speaking countries) will also be eligible. Particular attention will be paid to projects where the French team is associated with a research team from another European country. Candidate projects submitted falling outside the themes of the call for proposals but having strong potential as structuring operations will be considered. The same will apply for those projects which, although distinctly centred on a dominant line of research, aim to introduce transverse approaches from different disciplines. The interest for local or regional development and for strengthening of national capacities for research training and knowledge transfer will be paramount as criteria for selection by the committee of scientific experts responsible for assessing the submissions. Whatever the project submitted, candidate teams will be asked to prove that the expected results will have scope general enough to be applicable in different geographical, political or economic situations.

The objectives of research supported by this FSP are divided among three main fields each subdivided into several themes :

- Field 1: Earth and environment
- Field 2: Food and health
- Field 3: Globalized societies

Field 1: Earth and environment

Theme 1-1: Human pressure: study of environmental impacts, degradation and rehabilitation

Soil erosion, soil salinization, the impact of monocultures and deforestation, chemical pollution, biological and pathogenic contamination of soils and surface and ground water, the consequences of pumping from the underground water resources, the influence of dams and irrigation on downstream resources, changes in coastal areas (particularly lagoons, mangroves) and their resources under pressure of human activity are problems of great concern. The accumulation of household or industrial waste and sludge is becoming a crucial problem as much for megacities as for smaller communities.

Any initiative that can bring improved understanding of the mechanisms involved, develop models in order to predict better their potential impacts and develop any means of prevention, including legal measures, is strongly desirable.

Theme 1-2: Climate change and society

In what ways is climate variability manifesting itself, and what factors are prompting such fluctuations? The African monsoon plays a key role in sub-Saharan Africa's economy; what are the factors that govern its inter-annual variations and its longer-term evolution? What role does the tropical ocean play in climate balance on the regional and local scales? How is the gradual global warming that has been taking place over the past three decades showing its effects in Africa?

What would be the consequences, at local and regional scales, of warmer climate on water resources and plant or animal-derived food stuffs? How, in a situation of great shortage, would local populations

react? What zones would be particularly vulnerable where such a trend would lead to migration of rural populations towards the megacities?

Assessment of the vulnerability of agricultural production systems (agriculture, stock-rearing, fishing and forestry) and the solutions for adaptation to climatic change are also lines to explore with a view to combating poverty and food insecurity.

Theme 1-3: Ecosystems and biological diversity

The intertropical regions hold areas with the Earth's greatest level of biodiversity. It is there that ecosystems have had the time to evolve towards a high level of sophistication and interaction. This level of interdependence can be a factor advantageous for adaptation to new conditions, or one of fragility. What is the degree of degradation brought on by natural or anthropogenic changes in vegetation cover and in soils? To what extent can the disappearance of certain animal or plant species induce dysfunction in the ecosystem whose evolutionary framework is fixed by climate, soil, vegetation, and human activity?

It is therefore necessary to have good knowledge of the way they function, their dynamics and their degree of degradation -in particular for the most vulnerable ecosystems: deserts and tropical rainforest. Compilation of an inventory of the biodiversity and assessment of its predictable evolution is indispensable.

Energy resources raise particularly crucial problems. This issue should be approached in part by more detailed investigation of the effect of the evolution of societies on their environment: desertification resulting from tree felling for domestic fuel, management of this wood-cutting and reforestation measures. The other line of study is to estimate the potential for developing renewable energy resources.

Optimization of utilization of natural and semi-natural systems raises the following questions: what are the possible developments in productive ecological systems? What are the interactive mechanisms that govern these and what are the possible ways of improving them?

Field 2 : Food and health

Theme 2-1: Food security and sustainability of production systems

The fragility of production systems is the major factor determining the low level of production and productivity of agriculture and stock-rearing in the countries of the South. This situation engenders food insecurity and recurrent poverty.

The study of the factors influencing production aims to identify ways of optimizing them to boost agricultural production. An inventory of the genetic wealth of crop plants with a view to their use and development for food or industrial purposes must be made in order to protect these resources against effects of globalization and exploitation by large companies from the Northern Hemisphere without any return for the countries of the South.

Furthermore, is the transition between the traditional production systems, the semi-mechanization and mechanization and intensification of agriculture, stock-rearing, forestry and fisheries taking place in the right way without any rupture that could be harmful to the socio-economic and cultural development of vulnerable populations? What are the consequences of such transitions for employment and increased social insecurity of sections of society at risk? What conditions are necessary for this transition to be favourable for sustainable development of rural areas?

Finally, the rapid urbanization of the countries of the South has amplified and changed the issues and challenges that agricultural research faces. The sustainability of local systems of production and the difficulties in putting produce on the market must be looked at again in the light of the ways urban consumers buy and use food. Research can help producers adapt to new constraints and new opportunities created by these markets. It can also provide support for governments in their efforts to

meet the challenges of securing sufficient food supplies for towns and cities, health of food products, environmental management and economic sustainability.

Theme 2-2: Health security of food and drinking water

Definition is needed of the health risks associated with water and animal and plant production and with the commercial consequences of public health controls in the processing of food products. Drinking water supply management must be taken into account: are local resources sufficient? Is there a risk of contamination by pathogens dangerous for human health? Is the security of distribution networks assured? What are the suitable treatment and drainage methods? Doesn't the increase in human pressure have a limiting effect on water resources by attendant pollution of the catchment basins ?

Identification of foods and their qualities and insufficiencies should be promoted. A comparative assessment of production costs is needed to complement such research. Study of traditional processing and conservation procedures concerning local foods for human or domestic animal consumption will give better insight into the impact of modern processes and of their adoption. Research into alternative foods capable of compensating for deficiencies is an objective that must not be lost sight of.

The countries of the South must be enabled to commercialize their products under the best conditions avoiding the health barriers related to animal or plant diseases and concerning the presence of unacceptable levels of pesticides in foods. Research is therefore necessary geared to improving quality of food products, in particular on the prevention of food-related zoonoses and TIAC, thus allowing their free circulation on the international market.

Theme 2-3: Health

In human health, research is needed in fields, such as zoonoses, that might appear secondary compared with Aids or malaria but which sometimes severely damage human or animal health and well-being. In many urban areas, poorly regulated poultry or pig rearing encourages the proliferation of disease vectors or reservoirs (rodents, insects and acarions). Such situations can lead to epidemics: bird influenza, human plague, yellow fever, leishmaniasis and tuberculosis. A risk analysis in these urban centres is indispensable.

Non-transmissible diseases are sometimes neglected by international programmes. Assessment of the prevalence and the cost of these diseases is essential in order to target prevention schemes better.

In parallel, appreciation should be gained of the impact of animal or plant diseases on the available food supply. Research on autochthonous, disease-resistant animal races or plant varieties are of paramount importance if self-sufficiency is to be achieved, without recourse to imported races sensitive to tropical diseases and which hence lose all their potential genetic advantages in terms of productivity.

Finally, traditional pharmacopoeias used for humans or animals call for more extensive scientific studies with as objective the standardization and rationalization of production of plant-derived medicines to protect people from serious poisoning, which is still frequently the case.

Field 3- "Globalized" societies

Theme 3-1: Dynamics of socio-cultural identities

In what ways do communities perceive the wealth of what their society produces in intellectual and artistic terms? What programmes are there for the identification, collection, and management of such heritage? How can forms of legal protection be organized for this?

What place do the adopted form of development and model of governance give to young people? What factors determine possible adherence to a model of development of society or of government? What role do religions play in these developments? How does it happen that at the same time as rapid

intense assimilation of modernity is occurring, many diverse crises and conflicts rear up? How do national and international information systems in this field operate?

Does exploration of relations between the analysts and researchers, on the one hand, and of economic and political decision-makers, on the other, allow identification of “objective” causes of the onset of such crises? What are the national, regional and international means of intervention in the face of such crises, of surges of violence, and for crisis management and resolution? How do the large international organizations, the NGOs and States face the triple demands of “emergency-rehabilitation-development”?

Theme 3-2: African economies and globalization of markets

The African economies are experiencing rapid changes which are expressed, at different scales, by modified configurations of political and economic power and by national and international sources of competition the full measure of which must be taken into account.

On the basis of an examination of unions or other organizations set up, or of economic, commercial or customs agreements which are becoming established, how must the issues of regional or international issues integration be reformulated? Is it possible to trace out a new representation of African economies or of certain major sectors of activity for the continent? How do the different political or economic actors make the best of this- context and reshape it? What latitude have they for intervening in the principal international negotiations and what is the impact of these negotiations on the future outcome for African economies? The reinforcement of African economies also depends on abilities to finance development, including in microeconomic terms. It is therefore of prime importance to assess the impact of new systems of international funding (taxation, increase in the APD and debt management, etc.) on the public-private partnership or by way of policies of micro-finance promotion and revenue-generating activities (including the informal economy).

The new international economic relations present the problem of conflicts between legal systems one of the consequences of which is the emergence of an international "market" for law. How able are African countries to play a role in the formulation of international legal standards?

Theme 3-3 : Urbanization and development

The extension of large metropolises is simultaneously the cause and the effect of more or less powerful and durable economic polarization. How can African cities assert themselves as important centres of competitiveness that can pave the way for original prospects for development for Africa? What is the dynamics of the process of metropolization? How do urban networks organize themselves on the national continental scales? Does the emergence of megalopolises favour the development of States or does it accentuate socio-spatial differences? Migration of populations towards towns and cities tends to degrade the quality of urban life; what are the measures to adopt to avoid too severe a deterioration of the environment in towns and cities that are undergoing strong growth?

Towns and cities are complex and vulnerable. Their systems of government deserve special attention: appearance of local powers, claims for increased democracy and citizen’s participation, public-private contracting and partnerships, economic *lobbying*, and so on.

Urbanization brings into the open complex movements of fragmentation, desolidarization, recomposition and value transmission between generations. How can African towns and cities pick up the major challenge of reconciling urban “performance” and integration into globalization with consolidation of legitimacy at local level and equity in public policies?
