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EUROPÄISCHE VEREINIGUNG DER INSTITUTIONEN FÜR DIE ENTWICKLUNG DES LÄNDLICHEN RAUME
EUROPESE VERENIGING VAN DE INSTELLINGEN VOOR DE INRICHTING VAN HET PLATTELAND
ASSOCIAZIONE EUROPEA DEGLI ORGANISMI FONDIARI PER LA RISTRUTTURAZIONE FONDIARA
EUROPÆISKE FORENING AF INSTITUTIONER INDENFOR LANDDISTRIKTSUDVIKLING
EUROPEJSKIE STOWARZYSZENIE INSTYTUCJI ROZWOJU OBSZARÓW WIEJSKICH
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AEIAR Position paper on 'Conservation of agricultural and natural land and sustainable land management'

I. Function of land and mankind's needs for natural areas

The total surface of natural land in the world comes to 14 billion hectares of which 9.2 are home to plant life. Only 1.54 billion hectares are used as arable land; 3.43 billion are prairies and parks and 4.2 billion are forests. The agricultural areas, which correspond to one third of land mass, represent 98% of all the world's food supplies, the rest coming from the oceans and other bodies of water.

Natural land protects and filters water, has an influence on the atmosphere by emitting and storing gases (methane, carbon dioxide), vapour and dust. It recycles indispensable nutrients for plants, animals and humans. These natural areas also serve as a basis for biodiversity.

In 2000, one hectare of arable land could feed 4 people. Each week, the global population increases by 1.5 million inhabitants. By 2050, if agricultural land is not extended, 1 ha of arable land will have to feed 6 people whilst the yields remain stagnant in numerous regions around the world¹ (see figure 1). Moreover, the food production is currently facing competition from the production of biomass for fuel purposes. On one hand, pastures and arable land continue to encroach on forests at the rate of 9 million hectares/per year (based on 13 million deforested)². On the other hand, the phenomenon of salinisation is destroying irrigated land at the rate of 1.5 million ha each year³. Finally, 5 to 10 million ha of agricultural land is disappearing each year as it is sealed over or built upon⁴. Therefore, the threat looming over all of the agricultural and natural lands on our planet is clear.

¹ Prospective Agrimonde 2050, INRA-CIRAD

² FAO Communiqué of 14/11/2005

³ Centre d'Information sur l'Eau Agricole et ses Usages (FAO)

⁴ R. Levesque, 2009, Paysan n°314

In their functioning, agricultural and natural land are meeting the great challenges of the 21st century

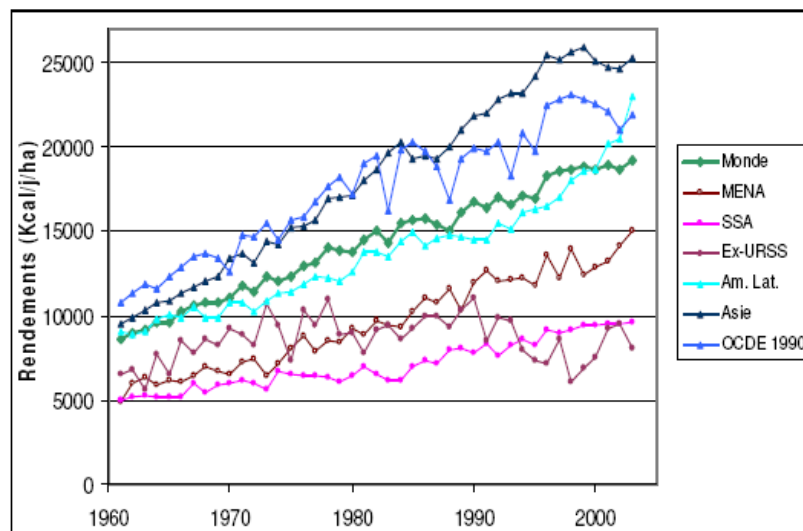
Rural areas are above all natural areas. They encompass agricultural and forest areas, fallow land, heaths and other areas which are often remarkable from the point of view of their biological diversity (peat bogs for example).

The function of these natural areas mentioned above impact directly on the challenges we face at the beginning of the 21st century:

- the fight against global warming,
- the food crisis,
- the energy crisis,
- management of water and biodiversity,
- the control of economic development (urbanisation in particular).

Let us examine these challenges one by one in order to better understand their connection with land management.

Figure 1: Evolution of the yield of food production in the different regions of the world between 1961 –2003



Source: Prospective Agrimonde 2050, position paper INRA-CIRAD (2009)

► The fight against global warming

In order to stabilise the temperature of the atmosphere, there needs to be a balance between emissions and the capture of greenhouse gases as quickly as possible. Yet, what has happened on a global scale since 2000?

Between 2000 and 2005, annual carbon emissions increased to 8.8 gigatonnes. At the same time, carbon sinks (soil and vegetation) on land and in the ocean captured only some 2.5 and 2.2 gigatonnes of carbon respectively. Over 4 gigatonnes of carbon have therefore accumulated each year in the atmosphere, increasing the amount of carbon already there by 0.5 % per year with, notably, an increase of nearly 2 ppm/year of the concentration of carbon gases .

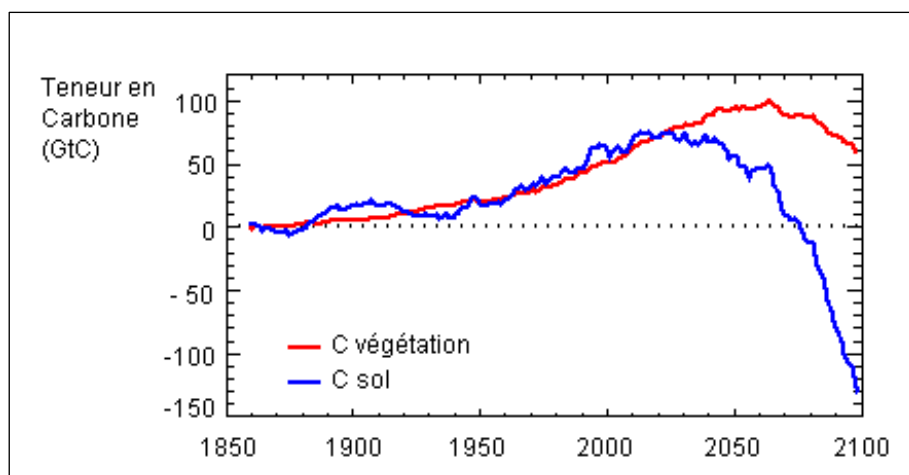
On the basis of 2000-2005, we would have to divide carbon emissions by 1.9 to reach a global balance. But the absorption capacity of the oceans is already decreasing and the capacity for absorption by the combination of soil-vegetation will decline sometime around 2025, on account of the balance of flux between atmosphere and soil (see figure 2). Therefore, in 15 years, the absorption capacity of nature could drop below 2.2 gigatonnes. The urgent need to reduce carbon emissions therefore grows from a factor of 1.9 to 4.

It should be noted that deforestation and land use change each year releases some 1.6 gigatonnes of carbon, or one third of what is captured by nature today, or three quarters of the potential for capture expected in 2025.

Failure to succeed in balancing emissions and the capture of greenhouse gases will increase in the short term the risk of famine for the poorest (by increasing the frequency of extreme climatic events); then, in a second phase, if global warming accelerates, the living conditions for less vulnerable populations will in turn be significantly degraded⁵. There are indications today, warning signals, that cannot be ignored.

In order to fight against climate change, we must reduce the use of fossil fuels (petrol, natural gas, coal) and, at the same time, we must do everything possible to ensure that the soil and vegetation are able to store a maximum amount of carbon, a maximum of organic material; deforestation must be stopped (recommendation of the Bali conference) and we must limit, to the maximum degree possible, the sealing of natural land with concrete and asphalt. Moreover, the storage of carbon in soil must be promoted by modifying cultural practices, for example by reinforcing the role of trees in rural areas.

Figure 2: Estimation of the evolution in the global levels of C (in Gt), in the soil and vegetation between 1860 and 2100 (Hadley Center)



Source: Cox, P.M., Betts, R.A., Jones, C.D., Spall, S.A. and Totterdell, I.J. (2000); *Acceleration of global warming due to carbon-cycle feedbacks in a coupled climate model*; Nature, 408, 184-187.

⁵ The situation described above is aggravated by the phenomenon of runaway climate change. This phenomenon results from the self feeding cycle of warming: the increased temperatures lead to a massive liberation of carbon from the soil, particularly by the more rapid deterioration of organic material in the soil and by the warming of the permafrost: instead of capturing it, as is currently the case, the continental carbon sinks will become net emitters of carbon, further feeding global warming.

► The food challenge

One can estimate that in order to satisfy the current need for food for undernourished or poorly nourished persons (the billion undernourished people and 1.2 billion poorly nourished people), production would have to increase by 30 %. Moreover, the demographic progression from 6.7 billion today to 8.5 or 9 billion people to be expected by 2050 would then require an increase in agricultural production from 70 up to 80 %.

To the extent that the conservation of 4.2 billion hectares of forest on the planet is indispensable in the fight against climate change, we are going to have to make do with the 1.5 billion hectares of arable land and the 3.4 billion hectares of prairies to meet future demand for food, taking into consideration that the resources provided by the oceans cannot be increased and represent less than 3 % of food production.

In a context such as this, the agricultural yields must increase by 1.3 to 1.4 % per year each year between now and 2050. An objective which would seem difficult to attain when one realises that the yields, which increased by 2 % per year between 1960 and 1990, did not increase more than 1.2 % in the decade starting 1990, and even less since then. The margins for the progression of yields seem currently to have been reduced by the higher cost of petrol, the increasing consideration of environmental impacts of agriculture, and above all, by the consequences of global warming (see figure 3).

Figure 3: *Estimation per country of the year of the reversal of the increasing trend in wheat yields (INRA-Arvalis 2009)*

Country	Year in which wheat yields stagnated
Spain	1989
Switzerland	1990
The Netherlands	1993
Italy	1994
Denmark	1995
United Kingdom	1996
France	1996
Germany	1999

Scientists confirm that it is effectively possible to feed 9 billion people, but only under certain conditions. The modification of our eating habits is one: in the OECD countries, the food ration must drop from 4000 to 3000 calories per day and must contain a smaller ratio of animal proteins⁶.

The food crisis will be all the more difficult to resolve as the urban extension continues. Based on current references on urban extension in Europe, as well as in the United States and China, it is a question of approximately 300 to 400 million hectares that may be urbanised between now and 2050. This surface area is comparable to the 1.5 billion hectares of arable land that makes up the most productive areas. On this basis, an increase in yield would no longer be required of 1.3 to 1.4 % per year, but rather an increase of 1.7 or 1.8 % per year. One cannot go on raising the target levels forever.

Solutions are still possible, but we must act; the longer we wait, the more difficult it will become to implement the solutions and the less effective they will be. The major risk facing humanity is the inability to avoid the runaway acceleration of global warming. Whilst the poorest will bear the greatest brunt, the rich will not be spared for long.

⁶ Prospective Agrimonde 2050, INRA-CIRAD

If the strong economies can make themselves heard with regard to urban sprawl and eating habits, there will still be a need to acquire new agricultural methods, particularly in associating trees with agriculture, which under certain conditions could allow an increase in the production of biomass on the order of 30 %⁷.

► The energy challenge

Natural areas play an essential role in the issue of energy. Taking into account the risk of the acceleration of climate change, the consumption of fossil fuels, and particularly coal, is currently excessive. Burning all the fossil fuel still in the ground would lead to a fivefold lift of the concentration of carbon dioxide in the atmosphere, whilst the increase by scarcely more than 10 % of this concentration could quickly lead to acceleration of climate change. Beyond the reductions in energy consumption that need to be made, everyone agrees that we must multiply the sources of energy and focus on renewable forms: hydroelectric, solar, wind, geothermal and tidal energy, bioenergy... without, in any case, this development leading to the detriment of natural and agricultural land.

Taking into account the demand for food, the demand for biomass should ultimately be focused only on ligneous biomass (wood). There again, we must consider that there are limitations. Of the 4.2 billion hectares of forests, part of this cannot be exploited on account of difficulty of access, degree of incline and biodiversity. Of the other part, what is obtained would be devoted on one hand, to biomaterials – which can enable carbon to be stored on the long-term and to reduce the petrol consumed in plastics and other construction materials – on the other hand, to fuel.

With the reduced access to petrol in order to fight against climate change, the demand for biomaterials would increase. At the rate of 245 million tonnes of plastic produced in 2008 derived from petroleum, their substitution by ligneous resources would mobilise 350 million m³ of wood, or 10% of the current annual production.

It is estimated that 50% of the global forest surface area is managed for, among other purposes, the production of wood, of which 68 % is specially dedicated to production⁸. The exploitation of these areas produces 3.9 billion m³ of wood, the energy value of which, including firewood and the byproducts of the wood industry, releases approximately 1 Gtep (giga tonnes-equivalent-petrol) according to the International Energy Agency. Without reducing the production of biomaterials (for which the demand will increase), it is difficult to imagine that forests could contribute energy over 3 Gtep/year, which is scarcely one third of the current world energy consumption⁹.

The combined pressure of the demand for materials and bioenergy could therefore significantly impact forest areas, which in any case would be incapable of single-handedly resolving the energy challenge at the rate of current consumption. And this is not even taking into account the necessity to regulate the harvesting of wood in order to avoid compromising the capacity for carbon storage and the system for supporting biodiversity that is present in forests.

► The water and biodiversity challenge

Climate change risks leading to more and more flooding and periods of drought. Thanks to the clay-humus complex, soil in fact provides a reserve of available water that is indispensable to plant growth. The vegetation on natural soil plays a fundamental role in the circulation of water,

⁷ Dupraz C., 2005. Entre agronomie et écologie : vers la gestion d'écosystèmes cultivés. Cahier d'étude DEMETER - Economie et Stratégies agricoles

⁸ FAO, global synthesis on the state of forests 2005.

⁹In their reference scenario, the International Energy Agency estimates that the need for primary energy will be 17.1 Gtep by 2030 (World Energy Outlook 2006). This scenario, taking into account the part it expects fossil fuels to play, remains in any case incompatible with the objectives of GIEC to limit atmospheric CO₂ concentration to 450ppm.

its infiltration and storage. The artificial limitation of soils and cultural practices removing vegetation covers for long periods of the year can lead to major risks of a modification of the hydrological systems, flooding and erosion. In this capacity, and in the capacity of maintaining ecological continuity, the reintegration of trees in association with agriculture is indispensable for preserving the natural environment. According to Professor Edward O. Wilson, if we continue to destroy certain natural environments, half or more of all plants and animals on the planet will have disappeared by the end of the 21st century. The preservation of natural environments will not be possible through a scattershot approach to conservation, ill-suited to the circulation of genes and cross pollination between varieties, but only through the protection of a global framework that is as coherent as possible.

Biodiversity, as a resource for genetic information, is of capital importance for humanity in terms of potential for pharmacological and agronomic applications. The more access we have to genes, the more genetics will have the possibility of selecting, improving and adapting plants and animals to the diverse climate conditions and soils. There again, the conclusion is the same: in order to preserve a maximum of biodiversity, we must preserve a maximum of natural areas.

Agricultural and natural land is the origin of production and environmental services which directly affect the entire planet. In meeting the global needs, and as the object of strong international competition, this land fully merits the European Union assigning it a framework for protection that is both qualitative and quantitative.

II. Strategy and instruments for protection of natural land

- reduce the consumption of natural areas,**
- make sustainable regional development possible.**

Agricultural land is not infinitely multipliable

Vast regions in Central Europe are situated in a climatic zone that is favourable for the production of plants, forests and natural areas, particularly with regard to average annual temperatures as well as the volume and distribution of precipitation. These arable lands form an important capital for the production of the food supply needed to feed the EU, but also for the rest of the world population. Furthermore, useful agricultural land is producing increasing amounts of biomass generating energy.

They also form an important part of the cultural landscape and fulfil multiple societal functions which go beyond pure agricultural production. Arable land covered with vegetation acts as a storage system for water, captures carbon dioxide from the atmosphere and creates a basis for biodiversity.

Each day, agriculture is irrevocably deprived of excellent arable and fertile land that is used to construct housing, commercial buildings, industrial buildings, communication routes (roads, railroads, airports, inland waterways, etc.) or infrastructure for leisure activities (see figure 4). In certain countries in Europe, an ecological compensation is required for any consumption of natural areas. The amount of land required sometimes amounts to double, triple or even quadruple the surface of forests or other natural areas (non agricultural) originally affected by the project. As a general rule, it is arable land that is utilised for the purpose of this compensation and which therefore is also removed from agricultural use. The loss of this arable land leads to a reduction in agricultural and economic potential and contributes, therefore, to a reduction in the number of jobs in the Member States.

Figure 4: Utilisation of useful land for non-agricultural purposes

(1) Data of 2008 (2) Data of 2009	Surface area (ha)	Agricultural land		Urbanised surface % of total surface	Reduction of agricultural and forest land		
		ha	% of total surface		Per year		Per day
					ha	% of total surface	ha
Belgium (1)	3.027.790	1.730.930	57%	20	4.300	0,14%	12
France (1)	54.919.000	27.476.927	51%	9	74.000	0,13%	200
Germany (2)	37.705.000	18.932.400	53%	13	40.000	0,11%	110
Lithuania (2)	6.530.000	3.954.600	61%	5	1.824	0,03%	5
Luxembourg (1)	258.600	136.400	53%	9	300	0,12%	1
Netherlands (2)	4.154.307	2.285.799	55%	12	6.092	0,15%	17
Poland (2)	31.268.000	19.069.000	61%	4	3.000	0,01%	8

In all of the member states of the EU, there exist laws and regulations for the management of land, urban and rural development, regional planning, protection of landscapes and natural resources and, to a lesser extent for the protection of soil. They form the framework for urbanisation, utilisation and protection of land. They are framed by European regulations such as Natura 2000, the directive on the protection of water, habitats, etc.

The members of AEIAR wish that the Council of Ministers for Agriculture and Rural Development, the Council of Ministers for the Environment and the Council of Ministers for Regional Development as well as the respective Directorate Generals of the European Commission and the consultant committees to the European Parliament actively pursue the objective of substantially reducing the consumption of agricultural and forest land. The European Union can exercise its influence on Member States according to the principle of subsidiarity in order to see to it that they protect their existing agricultural and natural land, in their national land-use plans and respective regional general development plans, and give it a special protection statute.

To this end, we recommend the following strategies and instruments:

► **A 'Statute of protection' for agricultural and natural land**

Within national plans land use plans, and local or regional rural development plans, agricultural and forest land must be protected as free areas that are placed under a 'status of protection'.

► **Urban renewal before urban extension**

- In the majority of European countries, the population level is no longer increasing; in fact it is even undergoing net reduction. In light of this, the utilisation of new agricultural land for the construction of housing is not generally justifiable. The policies for the development of agglomerations must give priority to urban renewal before taking recourse in adjacent agricultural land, according to the principle of 'reconstructing the city on the city', 'the town on the town' and 'the village on the village'. It is a matter of favouring renovation of what exists as opposed to the artificialisation of new areas.

- There often exists, within the interior of localities, terrain that has not been built upon, free space and fallow land of all types (commercial, industrial, former buildings that have gone to ruin, etc.). If these are rationally inventoried, the potential for internal development within the district can be revealed and mobilised.

- Appropriate instruments for financing should be created in order to resolve problematic situations at the urban level and to reconvert urban fallow land, particularly in small rural cities where there is a strong temptation to encroach on agricultural areas that are supposedly 'abundantly' available, particularly for reasons of short-term financial benefit. These instruments must encourage the acquisition, and reuse of land and the rapid reconversion of non-valorised urban space.

► **Intercommunal solutions for large companies, industrial and logistic sites offering advantages**

The installation of large-scale zones of activity is not possible and not appropriate in the interior or immediate periphery of localities. Intercommunal solutions may prove relevant for realising economies of appropriate scale, sharing costs of infrastructure for utilities and the necessary right-of-way.

► **Development of infrastructure and construction of roads**

– **Priority of the development of existing infrastructure**

The priority must be given to the development of roads in the existing network, which in general mobilises less natural space. Furthermore, this would prevent a further cutting up of the agricultural land and the fragmentation of ecological continuities.

– **If possible, ensure a link between urban extension and the renaturalisation of urban sites**

For infrastructural projects and road construction, if possible, there should be a link between the consumption of natural space and making new land available for agriculture. The demolition and renaturalisation ('de-concreting') can be performed on any non-natural land, on disused infrastructure or old buildings (former railroads, roads, military sites, parade grounds, barracks, etc.)

This would also generate an indirect effect: the revalorisation of urbanised land surfaces would allow the measures for ecological compensation to be reduced, which ultimately weigh upon cultivated land.

► **Promote the ecological grouping of biotopes by maintaining ecological continuities**

The protection of resources cannot be sustainable if a green network is not maintained which can connect the whole of the protected areas. The circulation of genes and plant and animal species is thus made possible on a national or continental scale and no longer merely on the scale of small isolated protected zones.

► **Principle of ecological compensation for the consumption of natural areas**

Areas near to large agglomerations, bordering cities or regions undergoing intense growth are often the object of strong real estate pressure to develop non-agricultural activities.

Conflicts of interest and utilisation of land may arise between municipalities, who in general want to see the establishment of activities that will create jobs, and an agricultural valorisation of peri-urban territories. In order to begin to remedy these conflicts, innovative instruments will be necessary. It is imperative to arrive at a clear overview of the inevitable interventions on natural areas and the landscape and to compensate for this in a different location with the same natural specificities (compensation). To do this, there is a need for diagnosis and evaluation of the interventions on the environment in function of predefined uniform and mandatory criteria. **A system of 'ecological points', based on these criteria, could allow the compensation of the development carried out on natural areas.** The generation of added ecological value (increase of biodiversity) in other sites, evaluated by the same criteria allows for generating new 'ecological points'.

In such a compensation framework, priority should be given to the following criteria:

- the improvement and management of existing and protected biotopes and natural areas
- the compensation for lost agricultural potential (water reserves)
- the inclusion of the efforts with regard to the demolition and the re-naturalisation of built-up areas, which can restore their potential for water and carbone storage capacity.

Taking into account the costs associated with the production of 'ecological points' would allow a financial evaluation and a balance to be drawn up. Placing points in reserve on an ecological account, in a manner independent of the place and date of intervention on natural areas could, if necessary, prove determinant for resolving the conflict of property use. This ecological compensation must also be ongoing throughout time (ganranteed on the long-term).

► **Necessity of responsible land management**

The members of AEIAR have an important role to play in fulfilling this mission. In order to reduce the consumption of natural areas and to efficiently prevent, within a useful span of time, conflicts of interest regarding the utilisation of land, a forward-looking and qualified land management is indispensable. The management and the realisation of this process will require instruments for land use planning and a policy for subsidy, in this case:

- **instruments for land rights**, in particular issuing pre-emptive rights for agricultural and forest land, in order to coutneract land speculation;
- **a land bank** in order to improve the structure of agricultural operations, realise compensation for expropriation in the case of the construction of infrastructure and to protect the environment.
- **instruments for integrated land development** ensuring the development of natural and agricultural land for multiple use, they highlight the reciprocal links between the various activities and the various sectors, and make it possible to realise the objectives for conservation and sustainable use by undertaking a wide range of actions within a single area.

Pre-emptive land rights, associated with a provision of land, are efficient structural political instruments for ensuring sustainable and integrated development of rural zones. The principle of this legal instrument is the same across various member states of the EU, but its implementation varies from country to country. With the aim of improving agricultural structures and the regulation of the marketplace for agricultural land, the creation of land banks could be supported within the context of the second pillar of the Common Agricultural Policy. The appropriate conditions for making this possible must be created.

The efficient management of land also depends on **instruments for land consolidation** which could be compatible with the maintenance of a green network and linear wooded landscape elements. These instruments can contribute to mobilising land for development projects and distributing the compensation for expropriations in the most equitable and least harmful way for agricultural operations.

In order to optimise the innovative regulations for ecological compensation for the developments in rural zones, an **Agency for 'ecological points' responsible for balancing property and the establishment of compensatory land** must be created.

This function could be fully assumed by the members of AEIAR.

We submit these elements to your attention with the assurance that we are at your disposal to provide further information on this memorandum as well as to contribute to the realisation of its recommendations.

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Annex

Summary of the missions and functions of AEIAR members

The AEIAR groups 24 agencies and institutions from 11 EU Member States and one candidate country. These organisations undertake measures in the public interest to improve farming structure and rural development and they are recognised by their respective countries for these purposes. AEIAR members fulfil important functions in putting into effect policies in their member states for assisting agriculture and rural areas and are also active in providing structural development aid across sectors, dealing with agriculture, environmental protection and local development.

The organisations and institutions grouped together in the AEIAR are partly involved in the execution of regulatory and subsidy missions by Member States and partly in implementing official missions on behalf of Member States, or they supplement state administrations by their activities. For example:

- as regards agricultural real estate transactions by exercising their pre-emption rights;
- in the case of privatisation, administration and leasing of agricultural land belonging to the state or public authorities;
- when agricultural businesses acquire land or enlarge holdings, or when they consolidate their land holdings;
- stockpiling land in their own or managed (held in trust) land banks for the purpose of improving agrarian structures and development, for infrastructure improvement and development, for nature conservation as well as water management projects and flood protection;
- and when implementing land consolidation measures.

The land management and land consolidation instruments deployed by AEIAR members contribute to a significant degree to reducing or solving land use conflicts, which may arise from varying claims on use of agricultural and natural land. AEIAR members seek to make a more marked contribution to reducing infrastructural and building claims on agricultural and natural land with their instruments and in the context of their activities.