

FINAL RAPORT

I	The Name of the Institution to be evaluated	<i>National Institute of Research-Development for Land Reclamation I.N.C.D.I.F. - „ISPIF” – Bucharest</i>
II	Evaluation Period	<i>10 – 12 September 2012</i>
III	Members of the Team	
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SYNTHETIC SUMMARY OF THE EVALUATION AND MAIN CONCLUSIONS

The team has evaluated I.N.C.D.I.F.-"ISPIF" Bucuresti based on the self-evaluation documents, presentations by the president of the scientific council and the team leaders, discussion with the scientific council and visits to laboratories, stations and facilities. Two days were spent in Bucharest and one day at Baneasa-Giurgiu research base.

ISPIF is an institute strongly oriented towards applied engineering, research and development in land reclamation, also providing technical assistance in the field. It is a unique research infrastructure with a very specific field of activity, and its expertise is highly needed for the Romanian agriculture. Although the institute has inherited an oversized infrastructure, which is now largely abandoned, its conservation becoming more and more difficult due to the high cost involved, the present organisation of the institute is compact and economical, and the management is quite effective.

It should be emphasized that over the last years ISPIF was constantly forced to reduce the number of employees to 250 at present, while in order to competitively support all the activities an optimal 400 should be aimed in the near future, if supported by the State.

As a whole, this is a strong research structure that has played an important role in developing Romanian agriculture, and still has an important role in the system of research, agricultural practice and education in Romania.

The main recommendations for further development of the institute as a *National Institute of Research-Development* are summarised below:

Publications and patenting

As a research institute, ISPIF should pay more attention to publishing in international ISI journals, aspect which has become increasingly important as an evaluation criterion of the scientists when applying for national grants. The change of mentality in young scientists obviously will increase the rate of international publications in this engineering environment. However, to be effective and beneficial for the institute, this would need some change in the priorities of the leadership which should become aware of this aspect, since we noticed that scientist do not even mention ISPIF affiliation in some of their publications. The management should be also more interested in innovation by stimulating and supporting the scientists in patenting their inventions.

Keep a balance between research and service activities

The capacity of the institute to attract funds from private sources was scored as a positive aspect. However, here we have noticed a potential risk for the institute to move their focus from research to services. They are successfully running the service part, but as a national institute ISPIF should be more active in research and innovation. A potential solution to address this concern is probably to separate research activities from services.

Strategic positioning

New connections should be established, and old ones revitalized, e.g. with Russia, Middle East and other eastern countries, based on connections and the renown ISPIF had in those regions before 1989. Based on that, and in the context of accentuated land reclamation challenges resulted from climate change, we believe that there is a possible role to be played by Romania through ISPIF in those regions.

Final remarks

From another point of view, without support, the way the institute is functioning now might lead to further deterioration of its activities, infrastructure and human potential. It should not be considered as a research institution *per se* and evaluated as such. The requirements to ISPIF to work as a "research institute" and to publish ISI research papers, train PhD students, teach at different levels, would not be the best policy for its development. Instead it should be treated and accordingly restructured as an entity with very high importance in the Romanian economy for revival of agricultural infrastructure, the whole arable land irrigation, road construction, geophysics research, and as a national reference for geophysics and agriculture infrastructure reconstruction. It should be recognised as a national priority to be developed to a much higher level of infrastructure, equipment and human resources. Its past and recent history should be a good reference of the

important role such infrastructure could play for the Romanian economy and especially in agriculture and rural development. ISPIFF is an entity that in every aspect deserves special attention from the Romanian government.

Team 1 – CRUTA

R&D activity

The CRUTA team is doing research and developing new tools in the field of remote sensing and its application to environmental issues in Romania. CRUTA is collaborating with French and other European geography groups, mainly working with remote sensing and geographical information system (GIS). This cooperation allows CRUTA to operate at the international level, for example, being involved in projects funded by the European Spatial Agency. CRUTA has a good fundraising record, which shows also a potential for establishing spin-offs and start-ups. The team has a good publication record, i.e., many papers in Romanian journals, but no papers in international scholarly journals (although they have one paper submitted to a high-rank ISI journal in the field of environmental remote sensing). The lack of importance given to publishing on international scholarly journals is typical for remote sensing research groups everywhere in Europe, because traditionally scientists working in this field concentrate more on the production of extension products, such as maps, rather than in publishing research papers. However, recently, at the European level, research groups have changed slightly their aims, since to access highly competitive funding they are evaluated taking into account their scientific production, i.e., number and quality of ISI papers. At CRUTA, considering both the human resources, e.g., young scientists and students, and the technical tools, programs and skills, there is a high potential to improve the scientific production. A change in the purposes and aims is needed; the leadership should encourage the young staff to publish their research results internationally, instead of publishing in local journals or proceedings.

Human Resources

CRUTA has a staff of very high-quality employees, 10 scientists and 2 technicians. The low number of staff in comparison with the other groups can be explained, and also makes sense, considering the field of activity. For example, in comparison with the other groups of ISPIFF, no extensive field work is needed. The average age in the group is 44.9, which is not bad. Overall, it seems that there is a very high potential to achieve high European standards, mainly because the staff is professional, technically skilled, and highly motivated: by increasing the publication rates in international scholarly journals, the access to European funds will be easier, the exchange of students and young scientists with other countries will increase, and this will trigger further publishing, cooperation and fundraising. The young scientists should be strongly encouraged in this direction, and mentored to publish their research in high-rank journals.

Infrastructures

The remote-sensing laboratories have the newest software and the best high-tech tools. No complain by the staff was recorded. Office space and building efficiency, maintenance, cleanness and conditions are very good, comparable with all other similar structures in Europe.

Management & Research Environment

The research environment seems to be excellent, with a good management, a highly respected leadership and a nice "lab atmosphere" among the youngest staff members.

General Feedback

Excellent human resources, highly motivated and technically skilled, along with excellent infrastructures, a very good working atmosphere, and a very efficient leadership have made of CRUTA a strong team, with productive cooperation activities at the European level, very good fundraising, a good publication record in Romanian journals and proceedings of meetings. A change of mentality, already noticed in the youngest generation of scientists working in the group when looking at their publication records, aimed at increasing the publication of scientific papers in international scholarly journals, maybe reducing the production of papers in local journals and proceedings, is needed now. The leadership should encourage young staff towards this direction.

Team 2 – Geo-science

R&D activity

The group focuses on projects in the fields of geological and geotechnical prospects, geo technics, engineering technology, hydrogeology, hydrology, applied hydraulics and hydrochemistry, and rock mechanics. They also perform geotechnical studies based on the foundation conditions for water reservoirs, pumping stations, pipes location lines and stability conditions for soil slopes, and geotechnical and hydrogeological mapping for regional and environmental development and planning. One of the important tasks of the team is creating geo-referential databases and meta-dates of the mathematical patterns and of the decision-making infrastructure for the conservation, reconstruction and sustainable use of biological and ecological diversity.

Human Resources

It is the largest team in the institute, with 115 employees, including 28 scientific researchers, 7 engineers and 16 technicians. The ratio of scientific researchers to auxiliary staff in the geo-science team is not entirely balanced, but one has to bear in mind that the nature or the applications of the group requires high number of technical staff. The average age of the scientific staff is 42, being the youngest team in the institute. No doubt that the R&D personnel are highly qualified and skilled in their field of activity. Generally the human potential in the group is on the edge of the normal functioning and the further cut in the number of scientists would lead to a group with not enough critical mass and as a result a non-functioning group.

Infrastructures

The group has facilities and equipment for specific investigations of soils and rocks, computers and software for digital processing in geodesy, topography, photogrammetry and mapping. The team hosts a Geotechnical Laboratory in which it can perform all types of analyses in the field. The laboratory is equipped with rather old-fashioned, but very solid and well working equipment. Recently the research infrastructure in the field of geophysics has been substantially updated with new equipment. The Geotechnical Laboratory is authorized by the Romanian State Inspection in Construction as stage I, and it has technical equipment adequate to the Romanian and International Standards.

Management & Research Environment

The group functions at a good level, ensuring a normal level of research and practical work and promotion of the research personnel. The team worked in a number of national and international projects in the field of geo-ecological and environmental studies and rehabilitation. The group was part in one large EU project and several national projects providing rather substantial financing for the whole institute over the evaluation period. Concerning the R&D work, the team has produced a number of professional publications in Romanian and one book, but no ISI papers are shown. Members of the group have also participated in workshops, seminars and national and international scientific meetings. As mentioned above, the number of papers in high quality journals is too low for the size and activity of the group. Members of the team have no national or international patents.

General Feedback

The team has been successful in raising public funds and rather successful in getting research and engineering grants from national and international sources. As for the ISPIF as a whole, the group is mostly involved in applied work in the engineering field, rather than in purely scientific research. On one side this is explicable provided the financial situation but on the other hand it should be increased, if the group would wish to enter international competition. The infrastructure of the group is at the average level of the whole institute and definitively needs updating. The group has very good experience in collaborating with SMEs and industry. International cooperation also should be increased. Increasing of ISI publications would be not the main suggestion to the group but it would help its general evaluation.

Team 3 – Agro-Environment

R&D activity

The activities of the group focus on projects in the fields of land reclamation and environmental protection, as well as in the development of methods and techniques with direct application in agriculture. Over the evaluated period, probably the most important R&D activity of the team has been its participation in an European project – EU-WATER: *'Transnational integrated management of water resources in agriculture for the European WATER emergency control'* – in the frame of SEE (South East Europe) Transnational Cooperation. Additional work, funded by three national research contracts, was related to management of water resources in agricultural land and livestock farms, the use of sloped terrains in agriculture, or the design and implementation of the National Digital Land Reclamation Database.

Human Resources

The team has 33 employees, including 17 scientific researchers (4 CS2, 9 CS3 and 4 ASC), 2 technological development engineers, 11 technicians and 3 sub-engineers; there is one PhD student in the group. The average age of the scientific staff is 45.8, just over the recommended age. The ratio of scientific researchers to auxiliary staff is much more balance than in other evaluated groups (the geo-science team and the Baneasa branch). In any case, the R&D personnel seem to be highly qualified and skilled in their field of activity.

Infrastructures

No information regarding the assignment of specific infrastructure to the team has been provided. See general comments on the infrastructure of ISPIF.

Management & Research Environment

The total contribution of the team's projects and contracts to the income of the Institute is not known, since no individualised information has been made available to the evaluation team. Concerning the EU project and the three national projects mentioned above, together they have provided almost 1 million Euro of public funds to ISPIF over the evaluation period. The R&D work of the Agro-Environmental team has produced a number of scientific/technical publications, including two ISI papers, six books and more than 50 additional professional publications; members of the group have also participated in several workshops, training courses and national and international scientific meetings. Although the overall scientific production is relatively good, the number of papers in international, high quality journals is too low for the size and activity of the group. Members of the team have also three national patents granted, but they have not been extended internationally, nor have they been licensed to any private company.

General Feedback

As for the ISPIF as a whole, the group is mostly involved in applied work in the engineering field, rather than in purely scientific research. Nevertheless, the team has been successful in getting public grants, from national and international sources, by applying for competitive projects, and have produced an important number of technical publications; however, they should greatly increase their efforts to publish higher quality papers in internationally recognised ISI journals. It is also difficult to understand the low number of patents granted at the national level, and the lack of international patents, for an institute focussed on applied work and used to close collaborations with private companies. Therefore, they should also try to increase the number of patents and to negotiate licenses and international extensions with private partners, to obtain higher revenues for the ISPIF.

Team 4 – Baneasa-Giurgiu

R&D activity

The team's activity is mostly focussed on applied work rather than research. At present they are responsible for the infrastructure of the irrigation and drainage systems, pumping and meteorological stations, etc. in the 325 ha of arable land belonging to this branch of ISPIF, which are also used, in part, for commercial activities (e.g., production of lawn for different customers). Recently, the group has elaborated a very interesting proposal on land reclamation and ecological reconstruction of lands in the Danube water floodplain, using a multidisciplinary approach (topographical, climate, hydrologic, hydraulic and pedological studies) and combining detailed pre-feasibility technical studies on the rehabilitation of the network of irrigation/drainage channels – which, if done completely, would require a very high investment, since most of the unwatering network is silted-up – with a slight reduction of the area used at present for agriculture, ecological crop rotation in the most fertile soil, expansion of forestry use (in part as wind-shelter for the crops), and flooding of less fertile zones to establish 'wetlands' for fishery facilities, wild-life reserves and agroturism development.

Human Resources

The team is composed of 22 members, including 19 technicians and workers and only 3 researchers (all CS3). The average age in the team is 55.79, ten years over the recommended age. Even though the profile of the group is adapted to the current activities developed at Baneasa, which are oriented to field work and services and not to research, the number of qualified personnel is very low – in contrast with the past when almost 100 R&D staff worked at Baneasa – and should be increased. Therefore, efforts are needed to employ young researchers, specifically some with biological background, to ensure the accuracy of the proposed ecological restoration programmes.

Infrastructures

The infrastructure is huge but very old. In the 1980s, at the Baneasa centre the number of employees was very high and presently the enormous building is almost empty. The team is doing a very good job of maintaining the old infrastructure in working conditions.

Management & Research Environment

During the period 2007-2011, the group obtained total funds of ca. 1,4 million Euro, about 20% from public national projects and 80% from private contracts, a very high amount for a team with such a reduced R&D staff. Apart from the project mentioned above on land reclamation and ecological reconstruction of lands in the Danube water floodplain, funded by the Ministry of Agriculture, most of the team's work relates to development, modernisation and/or implementation of irrigation installations, equipment and technologies.

General Feedback

The group is aware of the importance of the infrastructure they have inherited but cannot use, due to the lack of personnel. The ISPIF management presented to the evaluation committee two specific proposals (not included in the development plan) for the more efficient utilisation of that infrastructure and the staff's expertise:

- 1) Use of the arable land and technical personnel of the Institute at Baneasa for field tests of new hybrids or varieties obtained at Fundulea (where space could be a problem)
- 2) Use the building and the fields for practical training courses on agricultural methods and techniques for students of USAMV Bucharest and/or other universities; part of the building could be transformed into dormitories for accommodation of the students.

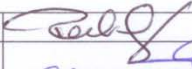
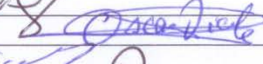
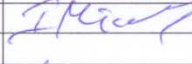
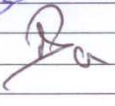
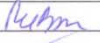



The evaluation committee would support the awarding of earmarked public funds to ISPIF for the organisation of these activities in Baneasa – apart from the funding that should be provided by Fundulea and the collaborating universities.

Justification of the marks awarded for each of the five (C1-C5) criteria

C₁	The quality of R&D activities and their results	4
Strengths	<p>There is a good production of technical publications in Romanian journals as well as books, technical booklets, proceedings and dissemination materials, important in the institute's field of activity. One of the strengths of ISPIF is raising funds from private national sources (20,6 million Euros evenly distributed over the evaluated period, 2007-2011). Some international funding was also obtained in 2011. Anyway, we would encourage the search for international funds as an alternative for the decreasing national ones from public sources. There is a big potential for ISPIF for establishing additional start-ups and spin-offs, since the Institute has experience in successfully working with and for private companies and industry. (A successful example is a joint Spin-Off ISPIF started long time ago with a similar institute from Canada). Very good level of sharing and dissemination, and other extension activities such as joint courses in collaboration with the Land Reclamation and Environmental Engineering Faculty (FIFIM), Bucharest, or meetings with farmers. Very good cooperation with Universities.</p>	
Weaknesses	<p>The main weaknesses for this criterion are the very low number of publications in international ISI journals, which is understandable considering the specificity of the Institute. However we would expect to see this compensated by the number of patents, which is very low too: only three national patents granted, and no international patents filled.</p>	
C₂	Human resources Quality	5
Strengths	<p>The Institute's teams are well balanced in terms of number of employees and complementary in activity and competences, each team performing well in its area of activity. The average age of the human resource involved in research is 47.4, slightly higher than preferred 45. However during the visit it became clear that the young generation is well represented, young researchers being hired to work on specific projects / contracts. Although there is no brain gain from abroad, the good connections with the local Universities give the Institute the opportunity to have a good flow of students. The ratio of R&D staff/administrative staff is close to 5:1, which seems to be reasonable for this Institute, but the auxiliary staff (technicians, laboratory assistants, workers) is somehow excessive. Obviously the auxiliary staff required by law to maintain the infrastructure is making this ratio higher than it should be.</p> <p>As a whole, the Institute has highly qualified and experienced core of scientists and engineers. The R&D and technical personnel have a very good professional level and technical skills, and are highly motivated.</p>	
Weaknesses	<p>As a whole, there is some imbalance in the R&D personnel / auxiliary staff ratio, which is obviously the result of strong reduction of the scientific staff over the last years.</p>	
C₃	Quality infrastructure and its rate of exploitation	4
Strengths	<p>ISPIF is doing an extremely good job in using and maintaining most of the old equipment in working conditions. The Institute's management has a very good strategy of not overspending money buying new and expensive equipment, but instead to subcontract external analytical services when required. Most equipment is old but robust and well functioning (e.g. in the geo-technical labs), relatively well maintained and conserved, and can be easily reactivated if needed. For activities that require new hi-tech equipment, the institute has purchased it and is using it a full potential, e.g. remote sensing lab. In general, considering only the infrastructure necessary for the present size of the Institute, its rate of exploitation is about 75%, in average. Specific infrastructure, like e.g. the CRUTA database is used at full potential.</p>	
Weaknesses	<p>The infrastructure and buildings were established for a ten times larger Institute. Some of the buildings are conserved and maintained, some are not used at all. Some old equipment as the equipment for fieldwork is underutilized due to the drastic reduction of the staff. The chemical lab is obsolete and should be at least partially renewed (or closed).</p>	

C₄	Management efficiency and quality of the research environment	5
Strengths	<p>Based on the provided documentation and on the information received during the visit, the evaluation team perceived that ISPIF has an efficient management and excellent working atmosphere. The institute is led in accord with national legislation and international ethical codes of behaviour. The staff is evaluated every year to negotiate the salaries, according to the legislation and under the supervision of the trade unions, based on several criteria – involvement in projects, professional activity, publications, etc. The main motivational mechanism used by the managerial team is based on salary increase and other additional payments. Administrative procedures are efficient, fast and streamlined (as in a private company), with internal audits and financial controls done every year. The institute has an efficient structure of ensuring transparency, with an Administrative Board, and the Board of directors, including group leaders and trade union representatives. The staff is involved in decision making through their representatives in the administrative board. No misbehaviour or ethical issues have been reported to the Ethics Committee, established in accord to legal requirements. The administrative and auxiliary staff actively supports the Institute’s activities. ISPIF is functioning in accordance to the European best practices and has several ISO certificates, renewed in a regular basis.</p>	
Weaknesses	<p>No relevant weaknesses have been detected regarding the management of the Institute</p>	
C₅	Quality and credibility of the institutional development plan	4
Strengths	<p>The institutional development plan is well written, including a fair and detailed SWOT analysis. The ISPIF has some clear ideas of how the Institute should be developed, based on the present needs and competences, and in accord to the national legislation. These include among others: increasing the level of collaboration with other national institutes and universities, providing thus opportunities for recruitment of young R&D personnel, and the strong partnerships with private companies, as well as to improve international collaborations, using the established good connections with colleagues from abroad.</p>	
Weaknesses	<p>However, several objectives of the developmental plant are too ambitious, and it does not seem realistic that they can be achieved within four years. Also, it is not clear how some of the proposed ideas will be implemented and the mechanisms to stimulate new directions of research and development are vague.</p>	

Proposed certification level: A (average mark 4.4)

Nr. crt.	Name, Surname	Signature
Evaluation TEAM		
1	Evaluator 1 – Paolo CHERUBINI	
2	Evaluator 2 – Oscar VICENTE MEANA	
3	Evaluator 3 – Ivan MINKOV	
4	Evaluator 4 – Daniel Ioan PĂCURAR	
5	Evaluator 5 – Monica BOSCAIU	
Observers		
1	Coordinating Authority – Gheorghe SIN	
2	CCCDI Representative – Ovidiu BADEA	
3	ANCS Representative – Simona MĂLUREANU	

Proposed Certification level: (4.4) A

Date: 5.11.2012