

**Monitoring system for the implementation of development
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SPECIAL REPORT ON THE PROGRESS IN THE IMPLEMENTATION OF THE TACIS NUCLEAR SAFETY PROJECTS



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BACKGROUND INFORMATION

This Special Report provides a brief overview of the overall performance of the Nuclear Safety (NS) projects financed within European Union's Tacis Nuclear Safety Assistance Programme. It reveals early signs of improvements in project implementation in Russia and Ukraine. These signs are recognised in the four thematic sectors in the Programme: On-site Assistance (OSA), 'Design Safety, OSEP, Simulators' (DS), Regulatory Authorities (NIERA, the former GAN), 'Radioactive Waste, Safeguards' (RW). It is based on analysis of monitoring reports and observations on the current situation. This is exclusively a desk study and did not involve any additional field activities.

The findings and observations presented in this document refer to the two years since the International Conference on the 10th Anniversary of the Tacis NS Programme held in Kiev in July 2002. The Conference discussed and supported the European Commission's assistance strategy for Partner States in the field of NS, and many of its recommendations have been incorporated into the NS Indicative Programme (IP) 2004-2006.

Over the last years the EC has made significant progress in reforming the European Community's external aid by strengthening strategic programming and evaluation, streamlining management structures, and improving working methods and quality. The main features of the new approach and practices applied in the area of NS are briefly reviewed in this report and comments provided as to their impact on achievements. This report's conclusions, although very preliminary and general, could nevertheless become a reference point for future work, especially within programming and implementation of the Tacis NS assistance. The report also contains a brief update on recent developments in the nuclear power sectors in Russia and Ukraine, creating a background of issues directly related to the projects' performance.

A major time consuming factor is the approval by the beneficiary country of each annual program. In Russia this may take up to 10-11 months. The time lost cannot be used for project implementation and thus can not be recuperated.

NUCLEAR POWER SECTOR IN RUSSIA

The Tacis NS Programme contributed considerably to the operation of the NPPs. Further development of the national nuclear power industry is determined by the "Energy strategy of Russia till 2020" which was approved by the government (Decree No. 1234-r of 28 August 2003).

Russia's nuclear power industry has entered a period of active development and has a growth target in annual power production of above 4%, delivering in 2010 about 200 billion kWh (roughly a 40% increase in current production level). Such plans require the addition of new power units and about twenty of them (with the total capacity of 20 GW) are under different stages of construction at various Nuclear Power Plants (NPPs). In addition, actions will be undertaken:

- to upgrade and extend by between 10 and 20 years the lifetime of power units in existing operating NPPs;
- to improve the overall of nuclear power generation at the existing running nuclear plants and establish NPP radioactive waste treatment facilities as well as irradiated fuel handling systems using the possibilities of Tacis Nuclear Safety programmes

Between 2010 and 2030 the nuclear industry's plans include the introduction of third generation (fast breeder) reactor technology. This is based on new uranium-plutonium fuel, which assists in addressing the limitations on raw materials for fuel for the foreseeable future. However, the Tacis NS Programme addresses only the needs of the running NPPs and is not involved in any way in related development work on future generation of reactors.

Administrative reorganisation in Russia

Following recent administrative changes in Russia, there are three active Project Partners (PP) in the NS Programme: (i) the Federal Agency for Atomic Energy (FAAE - former MinAtom), (ii) the Nuclear, Industrial and Environmental Regularity Authority (NIERA - formerly GosAtomNadzor, GAN), and (iii)

RosEnergoAtom (REA). This situation substantially complicates technical assistance within the NS programme and the direct impact of these changes on preparation and implementation of projects is negative due to the two main factors:

- the lack of a senior contact person in FAAE for the preparation of Action Programmes (AP), resulting in problems with dialogue on planning, coordination of on-going projects, etc;
- unclear (so far) division of functions of various government bodies (FAAE/ NIERA/ Ministry of Defence).

Despite currently experienced delays and complications it is envisaged that the problems caused by the recent Russian administrative reform will be short lived.

REA was transformed in 2001 into a generating company with NPPs as its branches. Currently, it is the PP in the framework of OSA projects - the largest component of the NS Programme. Any organisational problems within REA have a significant direct impact, especially on large-scale modernisation projects. It is clear that the following matters need attention and improvements:

- Cooperation between technical and international departments in REA,
- REA/NPP interactions are improving gradually. Currently REA (instead of NPP) is the contract authority for supply projects resulting in additional time needed for approval of project documents,
- The process of preparation and approval of (sub)contracts needs to be revised and sped up to improve the efficiency of the framework of Russian subcontracting activities. In this context the role of the Project Partners is very important.

The last remark concerns not only the OSA thematic sector activities, but to other sectors also such as the "Design Safety" projects which require contributions of highly specialised nuclear institutes. Furthermore, a lack of long demanded by AIDCO from the Beneficiary (ies) clarification on the statutes (legal, financial, managerial) of Russian enterprises/Project Partners has been and remains a hindrance for contracting.

NUCLEAR POWER SECTOR IN UKRAINE

There are also clear signs of positive changes in the nuclear energy sector of Ukraine. The energy generation of the 13 NPP units of Energoatom has been growing steadily, accounting for more than 50% of the total energy produced in Ukraine in 2003. Simultaneously, the earlier problems with payments for electricity have been mostly solved. Work is in progress on commissioning two new units this year. NPP modernisation and safety upgrading remain the strategic priorities for Energoatom, and improved indicators of NPP operation and safety have been achieved. An extension of the lifetime of operating units is among the short-term priorities of the sector. According to the recent draft 'Energy Strategy for Ukraine up to 2030 and further perspective of August 2004', nuclear energy will be one of the main energy sources.

In addition, efforts continue in the area of radioactive waste management, especially in the context of activities for preparing the Chernobyl NPP decommissioning and for executing the Shelter Implementation Plan for the desolated unit.

On-Site Assistance (OSA)

Tacis OSA to NPPs is an important element complementing the national programme for NPP modernisation and safety upgrade. The equipment supply projects (*'hard' assistance*) are relevant to safety issues, thus putting pressure on their timely implementation. During the past two years the 'backlog' of equipment supply projects has been reduced by the Commission.

The initial concept of Plant Improvement Projects (PIP) was strongly supported in Ukraine as it anticipated large-scale modernisation projects covering all phases from design to commissioning. Adapting the initial concept of a PIP to the new Financial Regulations and tender procedures will result in transferring to Energoatom the responsibility for funding and implementing the PIP components that require services of local companies (e.g. for engineering and the installation of equipment).

However, the idea of establishing Site Coordination Units (SCU) for the OSA and PIP is not likely to be endorsed by Energoatom, which seems more inclined to support a contractual definition of

the responsibilities of the Contracting Authority (Energoatom), PIP Contractors and the OSA Consultant.

Activities for the promotion of an effective safety culture (*'soft' assistance*) were planned without a systematic approach under previous OSA projects. The Commission's new OSA (*'bridging'*) contracts started in 2004 require the identification of NPP needs and definition of the scope of future *'soft'* assistance provided under PIPs.

Design Safety (DS)

The service contracts for several projects were completed in 2003 with generally good results. However, the efficiency of implementation, the effectiveness and sustainability of these projects have been effected by difficulties related to the procurement components of projects, as they were strongly linked with other tasks. The supplies of equipment were re-programmed under 2003 AP. The new approach of the Commission, programming the service and supply components of future projects through separate successive contracts, may help in eliminating these problems.

Project identification by the beneficiaries needs further improvement to ensure relevance to the priorities established for design safety issues in IP 2004-2006. Effective involvement of the State Nuclear Regulatory Committee (SNRC) in this process could help to correlate design safety projects with respective regulatory and/or licensing requirements.

RECENT CHANGES IN NS PROGRAMME & PROJECT MANAGEMENT AND COORDINATION

Project enlargement and integration

Up to 1998 the AP Tacis NS programmes concentrated on providing assistance in narrow fields, addressing specific NS problems and bottlenecks. After the initial urgency-based actions, a broader integrating approach (i.e. in operational assistance and regulatory practices) has been initiated. New types of integration projects are being implemented for large scale and selected DS projects. The current approach represents an opportunity to raise the level and scale of problems being solved, thus stimulating and providing examples of a value-added, systemic approach for the national nuclear structures.

However, there is also a potential downside to project enlargement. As the projects become more complex they are also more difficult to implement due to the need to strictly follow the relevant national procedures, standards and regulations. In addition, the larger numbers of participants needed for such projects often result in a more complex organisational set-up.

Large-scale modernisations and the integration of projects substantially increase the role of local subcontractors in ensuring good project performance and the achievement of project objectives. However, the response from both the Russian and Ukrainian nuclear sectors may be slower than needed as they remain centralised and hierarchical.

Because the organisational set-up of local institutions is often inadequate (lack of independence and fully defined responsibilities), contributions of project partners could in some cases be less than necessary to ensure success. Such risk exists especially in cases when a particular Western contractor has no previous experience in co-operation with the local nuclear institutions. Although the national participants, i.e. the project partner and the local subcontractor are today in theory independent from each other and their project roles are well specified in Terms of Reference (TOR), some difficulties in their interactions still remain.

Changes in the management of Tacis NS projects

The preliminary results of the recent changes in the Tacis NS component are now clearly visible and significantly contribute to the improvement of the projects' implementation. The main elements of the new management approach are:

- Establishment of clear and transparent administrative rules and requirements for all stages of project implementation, and for all participants, and their consistent observance/enforcement. In particular the rule "n+3" for contracting imposed by the New Financial Regulation (January 2003) should be mentioned as very positive factor improving the overall process of projects preparation

and start. This is the main condition which imposes a thorough and detailed preparation of any project before it can be presented under an Annual Programme.

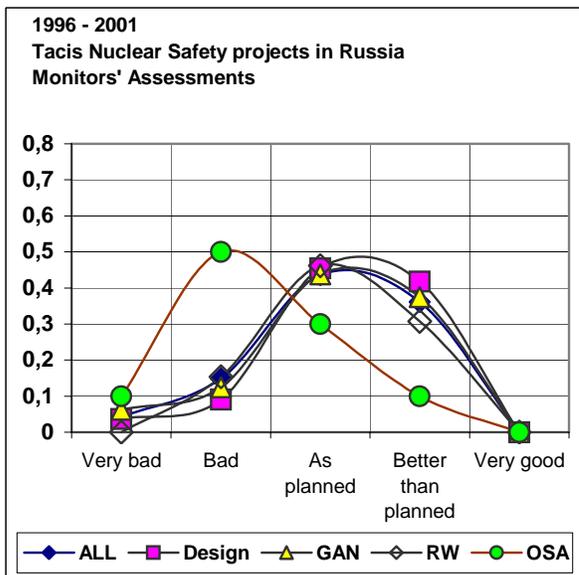
- Direct contact of Project Managers with their projects: participation in Steering Committees; regular site visits and communications with project participants.
- Better preparation of TORs confirmed by increasing number of results meeting TOR requirements,
- Result-oriented approach in management regarding payment against results and involvement of external expertise for the assessment of project's achievements.
- Full involvement and responsabilisation of the beneficiary in project identification and preparation for programming. Support from the Commission side can be set free upon a request from the beneficiary. As a result projects can only be programmed at the time that their preparation is completed ("programming of mature projects").
- Cancellation of apparently unsuccessful (not contracted in three years from the signature of the AP) projects.

The 2002 Tacis Conference requested improvements in the management, coordination and procedures for implementing the Tacis NS projects. Improvements were also suggested in communications. Beneficiaries are now informed on the status of project execution. Following new Financial Regulations, the contract procedures have been revised and Practical Guidelines are open to the public. The new approach to project identification and the formulation of annual Action Plans is being used by AIDCO, leading to improved planning with a potential positive impact on the implementation of projects.

COMMENTS AND OBSERVATIONS ON PERFORMANCE OF TACIS NS PROJECTS

The early analysis presented below shows improvements in the performance of projects. Comparisons are made for the period 1996 – 2001 with a relatively large sample of projects and 2003 – 2004, with a much smaller sample. The findings are presented to demonstrate changes/tendencies during the selected periods. Although improvement is apparent, caution needs to be exercised in referring to the extent of improvement.

The Figures below give the distribution of monitors' assessments for the two periods.



The following important facts can be noted:

- The current number of projects with poor performance (in very bad and bad categories) is significantly lower than before and the share of projects, implemented "as planned" is significantly higher for 2003 – 2004 (60-70 %) than for 1996 - 2001 (45-50%),
- OSA projects are now significantly better than before and OSA is no longer the worst sub-sector of the programme.

- Good status of the Design (Safety) projects mostly reflects the fact that the new projects (reprogrammed from 1997-1999 APs) are well designed, demonstrating a clear results-oriented approach.

Currently NS assistance is better synchronised with existing needs. This conclusion is derived from the comparison of assessments in quality of project design and is supported by monitoring team observations.

COMMENTS ON PARTICULAR ISSUES

Positive impact of foreign participants

Some “external” participants in the implementation of projects play important positive roles. The Joint Research Centre (JRC) in Petten has improved its efficiency in approving documents (technical specifications) and its functions have been broadened to active participation in large-scale projects. ITALTREND has been a procurement agent but, pursuant to changes in 2003 it will provide consulting services for the new supply projects and will continue the successful practice of providing training for Russian experts.

Assistance to Nuclear Regulatory Authority in Ukraine

The transfer of regulatory methodology and practices to SNRC from the Regulatory Authorities of the EU countries has been continued. The ‘2+2’ approach promoting effective technical dialogue between regulator and operator and ensuring support to them by European organisations has led to a successful completion of many licensing cases. The positive attitude of NPPs to the involvement of the EU Technical Safety Organisations (TSO) in the licensing process is being gradually strengthened due to better understanding of the purpose of this approach. The acquisition of the safety culture principles and of the up-to-date methods of work and experience of their European counterparts by the Ukrainian organisations are additional benefits. For NPPs it is also important that the cost of expert safety assessments, carried out in the course of licensing process, is covered by Tacis projects. The EU TSOs work is of critical importance and the utmost needs to be done to avoid any delays in the approval of the extensions/contracts by AIDCO.

CONCLUSIONS

- The implementation of the Tacis Nuclear Safety programmes in Russia and Ukraine has significantly improved during the last years, especially in the OSA sector. However, potential problems (i.e. harmonisation and co-ordination of Tacis large-scale projects with NPPs’ modernisation programmes) may arise during the PIP stages due to the absence of a mechanism to synchronise. However, some potential problems (regarding harmonisation and co-ordination of Tacis large-scale projects with the related overall NPPs’ modernisation programmes) cannot be excluded during PIP stages due to the lack of mechanisms (administrative measures and instruments) aiming at synchronisation of efforts and activities. The role of the Project Partner is particularly important in managing such risks,
- The recent administrative reform in Russia has a short-term negative influence on the preparation and implementation of projects,
- For Ukraine, full use of the authority of the Tacis Supervisory Board created in 2004 and the expected implementation of the project for establishing the ‘Joint Support Office’ would further enhance Tacis NS Programme processes.
- Following the 2002 Tacis Conference, the new approach of the Commission, launched in 2003 to project identification and formulation of annual Action Plans is being used by the Commission and has led to improved planning and implementation of projects.
- Due to the Commission’s efforts, the administrative control over the NS programme implementation has been substantially strengthened, leading to improvements in its efficiency.

RECOMMENDATIONS

Based on the above comments, and the information gathered in the field, the following recommendations are presented for further consideration:

- Intensification of communications with recipients of assistance would enhance better mutual understanding and increase awareness of the partners' needs, and promote a better understanding of the rules of the Commission and of national regulations and procedures.
- Introduction of a system for internal project monitoring by the contractor and PP, and supervised by the PM is expected to increase the efficiency and quality of internal communication/cooperation.
- Periodic reviews by the Commission jointly with the PP's and stimulation of PP's actions/plans for post-project development (using project results and examining conditions for sustainability) and feedback to programming are of key importance to increase PP's attention to sustainability and ensure the long-term impact of the NS programme.
- Stimulation of actions arising from the responsibility of the national nuclear operators to contribute case by case to the sustainability in the following manner by:
 - Analysing and integrating any plant modification (hardware) which has been useful in terms of safety into their plant management programmes and objectives.
 - Disseminating the results of "Design Safety" studies (ex. Accident analysis and associated management procedures) and "TSOs" safety reviews. If such results are not effectively disseminated by the Operator and/or Regulator their impact in terms of transfer of knowledge / sustainability remains very limited.