

Annual Programme Report
Norwegian Financial Mechanism 2009-2014
Norwegian-Estonian Research Cooperation Programme 2015

1. Executive summary

The Norwegian-Estonian Research Cooperation Programme (hereafter 'the Programme') was approved by the Donor in October 2012. The overall objective of the Programme is to enhance research-based knowledge development in Estonia through research cooperation between Norway and Estonia. 13 donor partnership projects are funded as a result of the single call in 2013. The projects represent all areas of research: culture and society (6 projects), environment and biosciences (3 projects), physical sciences and engineering (2 projects), and health (2 projects). The first projects started in September 2013 and the latest project in September 2014. All the projects were in progress during the reporting period and have already given information about some joint publications in the interim project reports for 2014.

The activities organised to develop bilateral relations and to ensure wider impact and better results of the Programme were designed to strengthen further scientific cooperation and participation in the EU Research and Innovation programme Horizon 2020 and to put more effort to capacity building (e.g. introducing Norway Grants and research cooperation programmes during Programme Operators meetings to wider audience, enabling Project Promoters to take part in Annual Conferences of the European Association of Research Managers and Administrators, inviting Norwegian experts to give presentations in capacity building conferences and seminars.

The main challenges of the Programme continue to be related to certain results, which may fully appear only after the end of the projects and Programme period (e.g. published articles, joint proposals for future cooperation). There are also some administrative risks that continuously need to be handled (e.g. risks concerning the Programme staff turnover and lack of competence, Project Promoters' lack of information and knowledge) but these will decrease towards the end of the Programme. Mitigating actions are taken accordingly.

2. Programme area specific developments

The overall objective of the Programme is to enhance research-based knowledge development in Estonia through research cooperation between Norway and Estonia. The Programme will strengthen bilateral relations with the aim of stimulating long-term cooperation, capacity and competence building and will support the achievement of the aims of national research and development strategy. The most important elements of the Programme are 13 financed research projects cooperating with research institutions in Norway. All the projects are in process.

The general context described in the Programme proposal or reported in the previous Annual Programme Reports has not changed in 2015. The Programme was prepared during the Estonian Research and Development and Innovation (RD&I) Strategy 2007-2013 'Knowledge-based Estonia'. New RD&I strategy for 2014-2020 was approved by the Parliament in January 2014. The two strategies are overlapping in several areas as described in the previous report. The Programme will contribute to the achievement of the aims of new strategy as development

of human resources and supporting the career model of a researcher, and interconnection with European Research Area initiatives (including Nordic cooperation) are important measures of the new strategy. Growth areas within the concept of smart specialisation have been identified, among which are, for instance, ICT and health technologies (priority areas for RD&I identified in the previous strategy). Therefore, the context has changed but it should not be considered as a risk for the Programme.

Objectives of the Estonian competitiveness strategy 'Estonia 2020': Raising the level of investments into research and development

Raising the level of investments into research and development					
Level in 2010	Level in 2012	Level in 2013	Level in 2014	Estonia's target 2015	Estonia's target 2020
1,6*%	2,16*%	1,74*%	1,44*	2%	3%

* Source: Statistics Estonia

Objectives of the Estonian RD&I Strategy 2007-2013 'Knowledge-based Estonia':

Indicator	2011	2012	2013	2014	Target by 2013
Researchers (FTE) per thousand total employment*	7,48	7,45	7,09	6,92	8
Number of high-quality publications**	1591	1632	1874	1812	1500

* Source: Statistics Estonia

** Source: Thomson Reuters Web of Science, databases SCI-EXPANDED, SSCI and A&HCI

Indicators and target values of the Estonian RD&I Strategy 2014-2020:

- 11% scientific publications in Estonia within the 10% most cited scientific publications worldwide (7,5% in 2008, 8,5% in 2009) – 8,5% in 2014; 8,5% in 2015 (Innovation Union Scoreboard 2014; 2015);
- 300 PhD graduates per academic year* (190 in 2012, 233 in 2013, 213 in 2013/14, 208 in 2014/15);
* Source: Estonian Education Information System EHS
- 1600 scientific publications per million population (1231 in 2012, 1420 in 2013) – 1511 in 2014; 1025 in 2015* (as of Dec 1, 2015)

Cooperation with the Nordic countries under the other programmes and initiatives may have a positive effect on the planned results of the Programme as well, although these are not directly related to the Programme. In December 2015, a conference about international cooperation took place in Tallinn. EEA/Norway Grants and research cooperation programmes were introduced by Aleksandra Witczak Haugstad from Research Council of Norway. During the conference also Nordic-Baltic Research Cooperation under NordForsk and Interreg Baltic Sea Region Programme 2014-2020 were introduced. This kind of events and initiatives may create a

forum for discussing the possible ways and modalities of future cooperation with the Nordic countries and broaden the impact of the Programme.

3. Reporting on outputs

The first projects started in September 2013 and the latest one in Sept 2014. Partnership agreements of all the projects are signed. In the beginning of March 2015 periodic reports of all financed projects covering the year 2014 were received.

We can report on some of the achieved values of indicators due to the fact that there will be no other calls launched during the Programme (target value shown in the Programme Agreement in brackets):

- The number of cooperative projects between Estonian and Norwegian research and development institutions – **13** (15)
- The number of cooperating research institutions of Estonia – **4** (15)
- The number of cooperating research institutions of Norway – **8** (15)
- The number female project leaders – **1** (6)

Due to the fact that the target levels of the indicators were fixed based on preliminary calculations (based on the number of projects financed with the lower maximum grant level (also, see section 4)) and not recalculated later, the target values related to the number of projects, cannot be fully achieved by the end of the Programme. However, this will reflect the fact that fewer but larger projects are financed, not the failure in implementing the projects or Programme as a whole.

The number of cooperating research institutions of Estonia and Norway is smaller compared to target value. This target was based on the fact that there are 18 positively evaluated R&D institutions in Estonia, however, only 4 made it to the top of the rank list with their projects (University of Tartu with 8 projects). Also, none of the projects had involved other Estonian R&D institutions as additional project partners. In comparison, the situation on the side of the Norwegian institutions is better: there are 8 Norwegian institutions involved as partners; two of the projects have an additional partner from Norway. The distribution of the projects across institutions was not a prioritised criterion in the selection of projects, where proposals were first of all ranked according to their scientific excellence. However, it should be noted that although the same institution acts as project promoter or partner in several projects, these are large universities with many departments and research groups. An analysis of the institutional location of the project partners shows that projects are distributed across different faculties and departments, meaning that the number of research groups involved in the cooperation and network building is much higher than what the count of institutions can show.

The target value for the number of female project leaders was set based on the results of the research programme implemented within the previous period of the Financial Mechanism (7 female project leaders out of 10). There were no special measures taken or budget set aside to ensure that projects with female leader get financed. One of the principles followed in the selection process was prioritizing project proposals with a female project leader (as it appeared to be gender less represented) in case of equal scores but it did not have any effect on the rank list of those projects, which were eventually financed.

Although final data for other indicators will be available after the submission of final project reports, we can present **provisional data for some indicators based on the project contracts¹, and projects interim reports presenting the results as December 2014** (target value shown in the Programme Agreement in brackets):

- The number of cooperating Estonian researchers – **42** (45)
- The number of cooperating Norwegian researchers – **37** (30)
- Percentage of researchers (PhD) supported by the programme that are female – **28²** (30)
- The number of PhD students involved in the cooperative projects – **33** (15)
- Number of internationally refereed joint scientific publications published as part of the programme (bibliometric data) – publications being prepared for submission **5**; submitted for review **5**; published **5** (15)
- The number of internationally refereed scientific publications – publications being prepared for submission **15**; submitted for review **26**; published **30** (15)

In addition to published articles, the projects report on the publications which are being prepared and submitted to review. Most projects have already reported about published articles in the interim reports. However, the Implementing Agency will check after the projects final reports are submitted (with the full texts available) if the articles reported on are indeed related to the project and have a reference to the Programme included. Only the publications with the reference to the Programme will be counted.

Based on the indicative data the target levels of the indicators are expected to be reached, and we could have even underestimated the target levels possible to achieve for some of the indicators. For instance, based on the preliminary data there are more than twice as many PhD students involved in the projects as the expected target level shows. Involving PhD students in the projects was one of the aims of the Programme and was emphasized during the call for proposals.

Further information about the progress will be available towards the end of the Programme when data will be gathered from the (final) reports of the projects (staff exchange/experts' visits, methods acquired, publications, joint proposals).

There are no pre-defined projects or small grant schemes being implemented in the Programme.

4. Reporting on Programme outcome(s)

The Programme has two outcomes:

- (1) increased research cooperation between Norway and the Beneficiary States;
- (2) strengthened research capacity in the Beneficiary States and increased application of research results through research cooperation between Norway and the Beneficiary States.

Please note that there was one single call for proposals launched in 2013 during the Programme to achieve the both outcomes. It is not possible to divide the budget or

¹ Project contract includes information about members of research staff, so-called main participants of the project (including PhD students).

² EE 33%, NO 22%

contribution of the projects between the outcomes. Differentiating between the outcomes is therefore symbolic, projects and Programme will contribute equally to both outcomes.

In the Programme proposal we planned to finance 15 bilateral research projects (with € 200 000 as maximum grant amount at the project level) and all target values assigned to the indicators depended on the number of financed projects. During the negotiations with the Donor and Donor Programme Partner it was decided to increase the maximum grant amount to € 300 000 in order to be able to finance bigger projects with potentially bigger impact. As a result, based on the former calculations the number of projects that could be financed (with the maximum grant level) decreased but the target values of the indicators were not changed in the Programme Agreement (it was not possible to forecast the grant level to be applied for). As all the target values for outcome and output indicators were based on the number of projects, the target values will probably not be fully achieved by the end of the Programme but this can at least partly be explained with less projects financed, not with failure in implementation of the projects or Programme as a whole.

The first projects financed from the Programme started in September 2013. Interim reports from all the financed projects were received in March 2015 (reporting period covers the year 2014). The Programme already contributing to the development of human resources and the strengthening bilateral relations. For instance, all projects involve Master's and/or PhD students, and researchers visiting partner institution to share best practices and learn from each other. The joint projects are expected to result in high-quality (joint) scientific publications and to support the PhD students in their studies. In general, the Programme is expected to contribute especially to the achievement of two aims of the Estonian RD&I strategy: that research be of high quality, Estonia be an attractive place for R&D and that the career of a researcher be a popular choice; and that Estonia be active and visible in international cooperation in the field of RD&I.

The risks described in the previous Annual Programme Reports have not changed, except for the fact that risks related to delays in payments is not considered to be relevant any more as the experience has shown that as a result of good cooperation between the Financial Mechanism Office, National Focal Point and the Implementing Agency the payments have been made in time.

The new Estonian RD&I strategy (see section 2) does not undermine the achievement of the outcomes and results of the Programme. Risks that need the attention at this point concern important 'products' of the Programme, e.g. (joint) research articles published by the end of the Programme period. Although the eligibility period for research programmes has been extended, the process of publishing high quality articles is time-consuming and complex and will have full results after the end of the Programme. These issues have been further elaborated in section 9 and Annex II.

Progress on horizontal concerns

Tallinn University and University of Bergen work together to understand the political and social factors for migration in the project EMP138 '**Political and socio-psychological determinants of inclusive integration context and their interdependencies**'. The project addresses directly the horizontal concerns related to promoting tolerance, multicultural understanding and respect of

the minorities as the central objective of the research is to develop understanding of the determinants of the inclusive integration context. The latter is defined as a context in which immigrant, national minority and national majority group members can feel secure and appreciated. Research seeks to understand intercultural relations in plural societies.

In order to combat against hate speech, extremism, racism and xenophobia, the current study focuses on the role of the majority group in the acculturation process. Directionality (whether changes take place in one or both groups) is one of the fundamental issues of all acculturation research and theory. The socio-political climate in the society and the attitudes, stereotypes and acculturation orientations of the dominant majority have a strong impact on the acculturation orientations of immigrant minorities. The project leader plans to disseminate the results also among other stakeholders in the two countries. Knowledge transfer from Norway to Estonia and vice versa regarding good practices in governance of multicultural societies will create a new base for strategic decision-making regarding integration issues in both countries.

No other projects have reported on dealing especially or directly with the horizontal concerns issues.

The principles laid down in the European Charter for Researchers will be reflected and promoted in the Programme (including ethical principles). The European Charter for Researchers is a set of general principles and requirements which specifies the roles, responsibilities and entitlements of researchers as well as of employers and/or funders of researchers.

5. Project selection

No calls were carried out during the reporting period. A single call for the projects was launched in March 2013 and 13 high-quality partnership projects were awarded a grant. The detailed overview of the call and results was presented in the Annual Programme Report 2013 and it will not be repeated here.

6. Progress of bilateral relations

Programme level

Donor Programme Partner, the Research Council of Norway (RCN) has been an excellent adviser in all matters concerning the implementation of the Programme (e.g. preparations of the work plans and budgets, advice on possible speakers for the capacity building conference, discussions about communication and reporting issues, etc.). In 2015 two Programme Operators workshops organized by the RCN took place: the first workshop took place in June in Brussels to exchange experiences and good practices between the Programme Operators in the field of communication; the second workshop took place in Oslo in October, the main topic to discuss was reporting, also Annex 12 issues were discussed.

The Norwegian Embassy in Tallinn continues to be a good partner in information and publicity activities (e.g. opening the Programme events, publishing news about the projects and Programme).

Project level

Cooperation with at least one research team of Norway (donor project partner) was a mandatory condition of the call and all 13 financed research projects are therefore donor partnership projects. Signing the partnership agreements between the project partners was more time-consuming than expected but the process was completed in October 2014. During

the reporting period all 13 projects submitted the interim reports covering the period of January – December 2014.

Active involvement of partners in the projects is expected and this will lead to exchange of good practices, knowledge and mutual understanding, access to valuable professional and technical skills together with joint ‘products’ such as articles written together. The Programme will strengthen the capacity and competence of the Estonian research community for increased participation in the European research community. The cooperation may lead to wider effects such as future cooperation in other projects, connections with professional networks, increased access to participation in the initiatives at the European/international level.

Examples of the progress of bilateral relations at the project level based on the projects interim reports:

- Project EMP128 **‘Activity-dependent regulation of BDNF and Arc: master genes in synaptic plasticity’**

Project partner’s main technical/professional contribution to the project is planning and carrying out experiments, particularly the in vivo animal experiments. New scientific methods, including stereotactic injection into brain and long term potentiation have been acquired by Estonian scientists in the University of Bergen. The partnership has significantly contributed to strengthening bilateral relations between the partner labs by several visits. The project partnership has helped to start to build up wider international cooperation in the field of neurotrophins and synaptic plasticity.

- Project EMP133 **‘Novel Analysis and Design Tools for Low-Density Parity-Check Codes’**

The expertise of groups in Norway and Estonia are complementary to each other. The Norwegian partner brings in the experience of study of combinatorial structures of Tanner graphs, such as stopping and trapping sets, and the Estonian partner brings in the experience of study of pseudocode words and their weights. This combination will strengthen the collaboration by using various approaches to problems under consideration.

- Project EMP138 **‘Political and socio-psychological determinants of inclusive integration context and their interdependencies’**

Donor project partner has contributed professionally in developing theoretical framework of the project (knowledge of local state of affairs). Additionally, technical contribution in data collection in Norway, communication of the project, exchange of contacts, and conference held in 2015 in Bergen, Norway where preliminary results of DIMA project are to be presented and discussed with international experts in topic of acculturation, is expected. Current partnership will achieve wider comparison of integration contexts and local migration and integration policies, making the results cross-culturally comparable. Information acquired from the project can be used both in policy context and further academic research. Dissemination of results among other stakeholders in the two countries is planned. Knowledge transfer from Norway to Estonia and vice versa regarding good practices in governance of multicultural societies – this will create a new base for strategic decision-making regarding integration issues in both countries.

- Project EMP151 **‘Animals in changing environments: Cultural mediation and semiotic analysis’**

The partnership contributed to strengthening bilateral relations in the form of staff exchange visits and consultations on the used methodologies and planned activities, as well as in cooperation in organising conferences and editing research publications. Wider

effects of the project partnership include participation of interested scholars in seminars organised as a part of the project, and dissemination of knowledge to people being interviewed under the case studies of the project.

- **Project EMP160 ‘Sami-Estonian language technology cooperation’**

The technical skills and theoretical knowledge of the project partner should be seen as crucial in achieving the project’s objectives. During the Tartu meeting, Francis Tyers from University of Tromsø devised a procedure to create semi-automatically a Finnish-Estonian dictionary for machine translation, based on available dictionaries for other languages, and including either Estonian or Finnish. The procedure was implemented in 2014, resulting in a dictionary for machine translation. Francis Tyers also gave guidelines for transforming the Estonian Constraint Grammar rules into a representation that would be compatible with the corresponding tools for other languages, present in the Tromsø R&D development environment Giellatekno.

- **Project EMP162 ‘DNA-based early detection and diagnostics of alien invasive forest pathogens and tracing of their introduction pathways into northern Europe’**

The project has an excellent cooperation with the Norwegian colleagues in several points: 1) planning and design of sampling work, 2) planning of expedition to the Russian Far East, 3) sample preparation for molecular work, and 4) supporting the scientific paper writing process. A major contribution of the Norwegian partner is to educate Estonians in RAD tag analysis by Ion Torrent PGM. The multi-disciplinary character of the project comes out from the perspective to combine molecular genetics, bioinformatics and basic forest pathology research into a collaborative milieu. The project presents great opportunities for further education and professional development of the students and researchers participating in the project. The project idea was presented in the COST meeting (Determining Invasiveness and Risk of Dothistroma (DIAROD) and also upon meetings of the UK driven Nornex consortium focused on genomics aspects regarding ash dieback. All that has been strengthened international collaboration between the forest pathologists.

- **Project EMP171 ‘Role of enzymes processivity in degradation of recalcitrant polysaccharides’**

The partners have been committed to reach the project goals and have openly discussed the important questions, when arisen. Exchange of samples and information has been fluent. Since in University of Tartu the enzymes from Norwegian University of Life Sciences were investigated, the partnership was indispensable in obtaining these results. The project has also significantly contributed in strengthening bilateral relations. The partners have agreed to continue the partnership in future projects.

- **EMP180 ‘Language and auditory brain: studies on central sound representation in auditory cortex’**

Project Partner, the Bergen fMRI group, has contributed specific methodological aspects. The group has extensive experience in MR imaging of auditory speech processing, and MR data analysis methods, as evidenced by publications in leading journals both in the field of cognitive neuroimaging as well as interdisciplinary journals (NeuroImage, PNAS, Cerebral Cortex). The contribution has consisted of advancement of knowledge on applications of various MR techniques in cognitive research that were also applied in the study concerning glutamatergic neurotransmission in relation to MMN that is currently under review after resubmission in the journal Psychophysiology. Secondly the Bergen fMRI group has wide knowledge of and practice in using the dichotic listening paradigm and experience in its applications (including neural correlates, training effects, clinical applications and

adaptation to smartphone application for large-scale data collection). They have contributed to the implementation of the dichotic listening methodology in the experimental research in the Institute of Psychology at the University of Tartu by providing the basis of the experimental program, consulting about the specific details of the paradigm as well as choice of stimuli.

- **EMP181 'Targeting glioma stem-like cells with tumor penetrating peptides'**

Project is based on unique match of complementary expertise of the partnering laboratories. Therefore the partnership is critically important for success of the project and achieving its goals. In University of Bergen 3D glioma spheroid culture and transfer cell lines and other reagents was learnt by a University of Tartu doctoral student.

- **EMP205 'Topical issues of consumer credit in Estonia and Norway'**

The bilateral relations between the Law Faculties of Oslo and Tartu University have definitely profited from the partnership. The cooperation between the faculties is widening and could include new areas and partners on both sides. Several research stays in Norway have been taken place by the Estonian researches. The research stays have resulted in joint articles with the Norwegian partner on consumer protection problems in consumer leasing contracts and a further joint article on responsible lending has been submitted for publication in the peer-reviewed journals.

- **EMP230 'DNS and 3D Reynolds Stress Turbulence Modeling in Particulate Channel Flows with Inter-Particle Collisions and Applications'**

During the course of the project in 2014, only a visit of Estonian team leader was completed. Dr. A. Kartushinsky made two presentations during one-week stay at University of Bergen. The research group of the project partner and a project leader had discussion focused on project flow and the analytical approach on effect of the particles collision. In general, the results of the discussion have allowed to clarify the ways of solution for the problems of the project.

- **EMP264 'Understanding policy change: Financial and fiscal bureaucracy in the Baltic Sea Region'**

The main results of the project achieved so far include extensive review of the relevant literature; design of the questionnaire including adaptation to country-specific contexts; effective exchange of country-specific as well as region-specific empirical knowledge between the two research teams which not only benefited the researchers but also identified other possible comparisons that could be drawn from the analysis of cases.

- **EMP265 'Biodiversity in the dark: High-throughput sequence analyses of arctic fungal communities (BioFun)'**

Project has greatly benefited from bidirectional transfer of knowledge that has been achieved in three meetings of the steering committee, where at least two of the project leaders have had a constructive discussion about the project details. More importantly, PhD students Sunil Mundra and Eveli Otsing were exchanged between the University of Tartu and University of Oslo for six weeks in autumn 2014. Both students learned the methods mastered by the partners and their projects greatly benefited from these visits. These meetings will greatly benefit the designing and coordinating new studies and result in co-authorships in several on-going projects.

Use of the funds for bilateral relations

In 2015, the funds for bilateral relations were used for a capacity building conference on intellectual property rights. International conference "Applied research linked intellectual

property aspects in Estonia and in Europe” was held from 10. – 11. Sept, 2015 in Tallinn and was partly financed from the Programme (travel and personnel costs of the Norwegian experts were covered). The first day of the conference was concentrated on intellectual property protection and legislation in Estonia in general. The second day focused on examples of cooperation between entrepreneurs and universities. In the conference programme there were two invited presentations from Norway (Morten Øien and Karl Klingsheim). Conference programme, videos and PowerPoint files are available on the Estonian Research Council’s homepage (as reported in section 10).

Funds have been used for covering registration fees of 8 participants from research and development departments of the Project Promoters to take part in the 21th Annual Conference of the European Association of Research Managers and Administrators (EARMA) held in Leiden in 28.06-1.07.2015. EARMA represents the community of research managers and administrators within Europe. The EARMA Conference 2015 was focused on Global Outreach: Enabling Cultures and Diversity in Research Management and Administration. Experiences acquired during the conference improved contacts between research organisations administrators.

Bilateral indicators

We can already report on some of the achieved values of indicators due to the fact that there will be no other calls launched during the Programme. Target level was fixed based on assumption that 15 projects would be financed, while in reality 13 projects have received support from the programme. The target of 15 therefore will not be reached (see section 3 for clarification) but a result of 13 means that all projects have delivered on a given indicator.

Bilateral indicators selected for the Programme (target value presented in brackets):

- Number of project partnership agreements in the beneficiary public sector – **13** (15)
For every project a separate partnership agreement is signed.
- Number of projects with expected shared results (both partners are involved professionally in planning and implementation and can claim credit for achieved results) – **13** (15)
All the projects are a partnership projects and therefore expected to have shared results.
- Number of joint (bilateral) articles published, written by persons from both institutions in a beneficiary and donor state, published in national or international publications, originated from project financed by the programme – publications being prepared for submission 5; submitted for review 5; published **5** (15). Reliable information about the publications will be available towards the end of the projects.

Risks that may impede achieving the bilateral results

- Expected number of joint articles will not be published – process of writing high level scientific article and getting it published is a time-consuming and complex process. Number of published articles is one of the indicators to measure the success of the projects/Programme but the full results will be seen after the end of the project (after submitting the final report) (see Annex II).
- Projects may fail due to lack of cooperation between the partners due to unclear roles and task, lack of joint responsibility – all the projects are donor partnership projects, cooperation and active involvement of partners in the joint project is a crucial factor of success (see Annex II).

Complementary action

Funds have been used for covering registration fees of 2 participants representing the Implementing Agency to take part in the 21th Annual Conference of the European Association of Research Managers and Administrators (EARMA) held in Leiden in 28.06. – 01.07.2015.

Travel costs of taking part in the workshops for the Programme Operators of the research programmes held in 9.-11.06.2015 in Brussels and 20. – 22.10.2015 in Oslo were covered from the funds for complementary actions. The main purpose of the Programme Operators workshops is to exchange experiences and good practices between the countries. Main topic of the Brussels workshop was communication and of the Oslo workshop reporting. During both workshops outreach presentations to introduce the research cooperation programmes in five countries were given to wider audiences, including Norwegian agencies and ministries (in Oslo) and DG Regio and DG RTD (in Brussels).

7. Monitoring

Estonian Research Council as the Implementing Agency of the Programme receives information about the progress and results of the projects through the project periodic reports. Reporting period is 1 January to 31 December, the first reporting period starts at the project start date (if different from 1 January), and the last reporting period ends on the date of the project completion (if different from 31 December). The project reports include the costs incurred and activities done by both the Project Promoter and the project partner(s). According to the principles and procedures described in the audited Management and Control System document, the Estonian Research Council has to carry out monitoring based on project documents listed in the project reports. The Estonian Research Council monitors the Project Promoters by checking the project periodic reports and project documentation. Formation the sample of documents bases on the random sample method. Checks are conducted by using comparative methodology.

In 2015 the Programme Committee was involved in the monitoring of scientific progress of all financed projects based on projects periodic reports for 2014. Scientific progress of projects was discussed during the Programme Committee video meeting in April 2015. Eight periodic reports were approved during the meeting, for five reports (EMP138, EMP160, EMP264, EMP181, EMP230) additional information was asked. The five reports were approved via e-mails in May after receiving clarifications from the project leaders. All project leaders have received a project periodic report review written by a Programme Committee member.

According to the monitoring plan for 2015 presented in the previous Annual Programme Report, six projects (EMP138, EMP162, EMP133, EMP151, EMP160, EMP205) were chosen for detailed monitoring. Reporting period to be monitored was Sept 2013 – Dec 2014, except project EMP162 which started in February 2014. Copies of selected documents were asked to submit for proof of expenditure and were received in time. Costs incurred by Project Promoters and Project Partners declared in the financial annexes of the project interim reports were checked in accordance with the project contracts (eligibility of the costs, are the declared costs actually incurred, accordance with the planned budget). Monitoring process was finished in the beginning of December signing the check-list/inspection reports for project documentation by the representatives of Implementing Agency and the Project Promoter. The amounts declared

in the interim reports are consistent with supporting documents, are reasonable, clearly related to the implementation of the project, documented, and meet the approved budget. Everything, except minor mistake due to human error in project EMP160 was found to be perfect (15 eurocents difference was discovered in the financial annex of the project interim report). In case of project EMP162 the status of Norwegian project partner has been changed after signing the partnership agreement of the project: Norwegian Forest and Landscape Institute has been merged together with another institute on 01.07. 2015 and thereby the stamps bear a new name: Norwegian Institute of Bioeconomy Research (NIBIO). Project Promoter was asked to forward to the Implementing Agency a letter from NIBIO confirming that the new institute will continue all activities in connection of the project.

Monitoring plan for the next reporting period is provided in the Annex I.

8. Need for adjustments

The amendment of the Programme Agreement was signed in October 2014 to extend the eligibility period for the Programme until 31 December 2017.

9. Risk management

At this point, the risks related to the results of the Programme (information about some of the results may not be available by the time of the projects/Programme end; expected number of joint articles may not be published as a result of the projects) are continuously considered to be the highest, data about reaching the indicator target values will be available towards the end of the projects/Programme. The second group of risks with higher impact and likelihood is related to the operational issues (staff turnover, lack of competence of staff, Project Promoters' lack of information and knowledge on regulations and conditions set for the projects/Programme). The second group risks will decrease towards the end of the Programme. No new risks have been identified during the reporting period. The more detailed overview of the risks and mitigating actions has been presented in the Annex II.

10. Information and publicity

Activities described in the Communication Plan have been carried out according to the plan. Updated information about the Programme and financed projects (links to the projects' web pages added) is published on the [Estonian Research Council's webpage](#).

Information about all financed projects is entered to DoRIS and overviews are also available on the [Financial Mechanism Office's webpage](#). Projects' URLs were added in DoRIS in summer 2015 (not published on FMO's webpage where under Project website the Project Promoters' websites are available).

A capacity building conference 'Applied research linked intellectual property aspects in Estonia and in Europe' was organised by the Estonian Research Council and took place on 10. – 11. September 2015 in Tallinn. Conference programme, videos and PowerPoint files are available on the [Estonia Research Council's webpage](#). The conference was opened by Chancellor of Justice Ülle Madise and Ambassador of Norway in Estonia Dagfinn Sørli.

In November an information seminar for Project Promoters was held in Tartu. Project leaders gave an overview of the projects, bilateral relations on project level were outlined. One main

aim of the workshop was to stress the importance of the projects' webpages to the Project Promoters.

Conference about international cooperation was held on 03.12.2015 in Tallinn. Aleksandra Witczak Haugstad from Research Council of Norway was invited to give a [presentation about Norway Grants and the Programme](#).

11. Cross-cutting issues

Good governance

To ensure that the principles of good governance are followed the implementation of the Programme is conducted in accordance with the Annex 12. The Annex is based on best practice in Europe and describes in detail how the Programme will be implemented, including the role and responsibilities of the Programme Operator and Program Committee, modalities of cooperation and intellectual property rights. In addition, Annex 12 provides specific rules on the submission and evaluation of the project proposals, negotiations and awards in addition to reporting requirements and payment.

The call documents were prepared and call procedures were built up in order to ensure transparency. Guide for applicants and evaluators were published with the launch of the call. The guides included well defined selection criteria and description of procedures. The basic information about the financed projects is available on the webpage of Estonian Research Council.

Environmental considerations

Activities carried out under the Programme are in compliance with EU legislation and will not harm the environment. Research projects related to environment (3 financed projects within the area of Environment and Biosciences) will give valuable knowledge in the environmental field and are in a more general manner related to the environmental considerations. Through dissemination of research results the funded projects will contribute to environmental improvements in Estonia and Norway.

For instance, the project EMP151 "Animals in changing environments: Cultural mediation and semiotic analysis" has reported on the environmental issues as follows:

"One of the major goals of the projects is to develop better public understanding of animals and interpretations thereof and to elaborate better wildlife management practices. The project itself, however, does not have much environmental impact as it focuses mostly on theory development and relies on social science / humanities methods of research. The project governance minimises the environmental impact by preferring electronic means of communication and data management to paper documentation."

Project EMP162 "DNA-based early detection and diagnostics of alien invasive forest pathogens and tracing of their introduction pathways into northern Europe" deals with invasive plant pathogens, most commonly introduced to new regions through global trade of plant material, which are increasingly threatening native plants and ecosystem stability in the introduced range. To counteract this scenario in forest ecosystems, the project aims to improve the diagnosis of pathogens in early latent phase of infection in order to allow cost-effective and sensitive high through-put screening of imported plant material for the presence of invasive tree pathogens. The

elucidation of the introductory pathways of some invasive pathogens targeted in the proposal will increase political and public awareness of the risks involved in plant trading.

Economic and social sustainability

Through the targeted use of capacity building measures (funds for bilateral relations) the Estonian research community will attain research capacity and competence, with effect beyond the duration of the Programme. Capacity building will also be an important component of individual projects in the Programme.

Estonia and Norway will benefit from the results of joint activities and have better perspectives to implement these results for prosperity of their economy and society. Through the Programme and the individual projects, participants may have broader access to future participation in the networks and R&D infrastructures, EU framework programmes and other relevant European research programmes and initiatives. The programme will also contribute to the development of the European Research Area.

The Programme supports the projects in which industry might be interested to provide a better knowledge base for promoting innovation and commercialisation in both countries. For instance, the University of Tartu will cooperate with the University of Bergen to implement a project³, which can help in establishing a suitable environment for attracting companies in the fields of wireless and wired communications and data storage to establish research and development activities in the participating countries; Tallinn University of Technology and the University of Bergen will work on a project⁴, which could find immediate application for optimal designing and structural calculations of various devices for solid fuel power plants, pneumo-conveying devices as well as various gas-purifying equipment.

Other good examples in different areas of research can be presented as well (based on the project reports):

Project EMP138 „Political and socio-psychological determinants of inclusive integration context and their interdependencies“ has reported that “The project improves sustainability in disseminating the knowledge from the results and cooperating with stakeholders at different levels and focuses on multicultural environment and integration policy and practices both in Estonia and Norway. The results can be well used in integration policy-making and through the latter, improve national capability of understanding minorities and improve their socio-economical well-being through diverse opportunities.”

Project EMP151 “Animals in changing environments: Cultural mediation and semiotic analysis” has reported that “The project management aims at maximising the outcome of the project in the reasonable cost, and actively searches the additional funding options to allow the continuation of the research of the animal representation after the end of the current project. The case study on adaptation of companion dogs to changing environments is expected to bring public attention to the problems of visually impaired people, thereby increasing social sustainability.”

³ Project EMP133 „Novel Analysis and Design Tools for Low-Density Parity-Check Codes”

⁴ Project EMP230 „DNS and 3D Reynolds Stress Turbulence Modeling in Particulate Channel Flows with Inter-Particle Collisions and Applications“

Project EMP171 “Role of enzymes processivity in degradation of recalcitrant polysaccharides” contributes to the sustainable development through valorization of biomass. In long-term perspective the project is also directed to reduce the negative impact of human activities to environment. The use of biomass for energy production (transportation fuels) is expected to decrease the consumption of fossil fuels and carbon-dioxide emissions.

Project EMP205 “Topical issues of consumer credit in Estonia and Norway” has reported that “The project is indirectly aimed at economic and social sustainability as the consumer credit and problems of consumer over-indebtedness certainly do relate to social sustainability. The project aims at finding out the possible legal and institutional solutions of reducing consumer debt and encouraging responsible lending in the Nordic-Baltic area.”

Gender equality

Gender composition was taken into account in the process of forming the Programme Committee. In the process of peer review both genders among experts were represented. One of the principles taken into account while ranking the project proposals for final selection was giving a priority to projects with female project leader (appeared to be gender less represented) in case of equally scored proposals. Financed research projects are gender neutral.

12. Reporting on sustainability

Not applicable.

13. Attachments to the Annual Programme Report

Annex I – Monitoring Plan 2016

Annex II – Risk assessment of the Programme

Annex III – Project level results

14. Attachment to the Final Programme Report

Not applicable.

Annex I: Monitoring Plan 2016

Monitoring will be carried out according to the principles and procedures described in the audited Management and Control System of the Programme.

The Estonian Research Council will monitor the Project Promoters by checking the project interim reports and project documentation. The sample of documents will be formed based on the random sample method. No on-site monitoring visits will take place. 7 projects will be monitored in 2016. Selection of the projects is based on the principle of monitoring every project at least once during the project period.

In 2016, the following projects will be monitored:

Project Promoter	Project no	Reporting period to be monitored	Project title	Project leader
Tallinn University of Technology	EMP128	Jan 2014 – Dec 2015	Activity-dependent regulation of BDNF and Arc: master genes in synaptic plasticity	Tõnis Timmusk
Tallinn University of Technology	EMP230	Jan 2014 – Dec 2015	DNS and 3D Reynolds Stress Turbulence Modeling in Particulate Channel Flows with Inter-Particle Collisions and Applications	Aleksander Kartušinski
Tallinn University of Technology	EMP264	Jan 2014 – Dec 2015	Understanding policy change: Financial and fiscal bureaucracy in the Baltic Sea Region	Rainer Kattel
University of Tartu	EMP180	Jan 2014 – Dec 2015	Language and auditory brain: studies on central sound representation in auditory cortex	Risto Kalervo Näätänen
University of Tartu	EMP181	Sept 2014 – Dec 2015	Targeting glioma stem-like cells with tumor penetrating peptides	Tambet Teesalu
University of Tartu	EMP171	Nov 2013 – Dec 2015	Role of enzymes processivity in degradation of recalcitrant polysaccharides	Priit Väljamäe
University of Tartu	EMP265	Sept 2013 – Dec 2015	Biodiversity in the dark: High-throughput sequence analyses of arctic fungal communities (BioFun)	Leho Tedersoo

Monitoring of the projects is based on the annual scientific and financial periodic progress reports and will be carried out in the first half of 2016:

- Costs incurred by Project Promoters and Project Partners are declared in the financial progress reports and will be checked in accordance with the project contracts (eligibility of the costs, are the declared costs actually incurred, accordance with the planned budget). Copies of selected documents will be asked to submit for proof of expenditure.
- In the annual scientific report a summary of project context and objectives will be given together with an overview of the work done during the reporting period and the main results achieved so far (including data relevant for the Programme indicators). Information and publicity plan of the project and address of the public website of the project will be provided in the report, and accordance with the information and publicity requirements will be checked. The periodic report also includes information about project coordination activities (e.g. communication and cooperation between the project partners). Documentation of the project activities will be checked (e.g. agreed minutes of the meeting of the joint steering committee of the project, webpage of the project).

In addition, the scientific progress based on project interim reports will be reviewed by the members of the Programme Committee and will be discussed at the Programme Committee's meeting, which will take place in April 2016.

The activities of the Estonian Research Council as the Implementing Agency was monitored by the Ministry of Education and Research as the Programme Operator through coordination of annual reports and through checks, which were carried out with the assistance of experts. The purposeful use of the funds of the Programme (in accordance with the provisions of the Regulation, the Programme Agreement and the Programme Implementation Agreement) and their compliance with legislation was checked. It was also checked whether the declared costs were eligible, documented and had actually been incurred.

Monitoring of the Implementing Agency was carried out in November.

- Check on incurring management costs (including costs of promoting bilateral relations and complementary actions) were based on the random sample method with the aim of having up to 5% of the costs checked.
- Check on the fulfilment of other obligations associated with the implementation of the Programme was carried out to ensure that the tasks and requirements agreed on in the Programme Implementation Agreement nr 1.1-8/13/879 and that the implementation complies with the national and Norway/EEA Grants legal framework (e.g. compliance with the requirements for information and publicity).
- Check on organisation of information days and publicity activities for applicants and project promoters have been taken place.
- Check on implementation of SFOS (entry of data on checks and decisions on reclamation of the grant).

Only suggestion was made for Estonian Research Council: to update their web page and arrange information about Estonian-Norwegian Research Cooperation Programme that it would be easily accessible. No more suggestions were made.

Annex II: Risk assessment of the programme

Programme EE006	Type of objective ⁵	Description of risk	Likelihood ⁶	Consequence ⁷	Mitigation planned/done
	Cohesion (Programme) outcomes:	Legal requirements and conditions set for the Programme and projects are not met	2	4	Register of all relevant regulations; comprehensive partnership agreements and project contracts signed; sufficient project monitoring; effective and efficient communication between the Implementing Agency and Project Promoters, spreading relevant information (e.g. webpage, seminars to be organised, etc.), advising Project Promoters and sharing experiences, activities for the project partners coordinated by RCN.
		Projects selected for funding will not support the achievement of the aims of national strategies and priorities	1	4	The situation provides general context for the Programme and will not have any negative effects on the outcomes of the Programme/projects. Aims, measures and priority areas in the new Estonian RD&I strategy 2014-2020 are overlapping with the previous strategy (2007-2013), Programme is in line with the new strategy.
		Information about some of the results to fully assess the success of the Programme will not be available by the end of the projects/Programme (e.g. publications, joint proposals submitted to the pan-European financing initiatives)	2	4	As the eligibility period of projects was extended by FMO, the projects may last 3 years which is minimum length of research projects to get better publishable results; projects will also report on the articles that are being prepared or have been submitted for reviewing in addition to reporting on the articles published already; projects will also report on the motivation or plans for future cooperation (results reported on in more general terms)
	Bilateral outcome(s):	Projects lack shared results due to unclear roles and tasks of partners, lack of cooperation and joint responsibility (bilateral indicator)	1	4	Comprehensive partnership agreements signed; set-up of the joint steering committee for every project; sufficient project monitoring.
		Expected number of joint articles will not be published as a result of the cooperation projects (bilateral indicator)	2	4	Projects have less time constraints; projects will also report on the articles that are being prepared or have been submitted for reviewing in addition to the articles published already.
	Operational issues:	Staff turnover (at project and Programme level) leads to the loss of information, mistakes made, delays, etc.	2	3	Reduce risk through re-evaluation and re-organisation of the work practice; work procedures are described and documented clearly (e.g. by setting up management and control system and institutional regulations)
		Lack of competence of the Programme staff leads to the loss of information, mistakes made, delays, etc.	2	3	Constant analysis of the situation; trainings and seminars for staff (e.g. organised by National Focal Point, Financial Mechanism Office, Donor Programme Partners). Annual or bi-annual Programme Operators seminars have been organised by RCN (to discuss indicators, communication, reporting, etc. issues).
		Project Promoters' lack of information and knowledge on regulations and conditions set for projects/Programme will lead to mistakes, delays, etc.	2	3	Sufficient information spread and publicity measures taken; effective and efficient communication between the Project Promoters and Implementing Agency (e.g. webpage, seminars); advising Project Promoters and discussing the issues regarding project implementation, sharing experiences; sufficient project monitoring; comprehensive partnership agreements and project contracts concluded; activities for the project partners coordinated by RCN.

⁵ The risks should be categorised in one of 3 ways, depending on whether it poses a risk to the cohesion objective, the bilateral objective, or is more of an operational issue.

⁶ Each risk should be described as to whether it poses a risk to the cohesion outcomes (programme outcomes), the bilateral outcome or crucial operational issues 4 = Almost certain (75 – 99% likelihood); 3 = Likely (50 – 74%); 2 = Possible (25 – 49%); 1 = Unlikely (1 – 24%)

⁷ Assess the consequence(s) in the event that the outcomes and/or crucial operations are not delivered, where 4 = severe; 3 = major; 2 = moderate; 1 = minor; n/a = not relevant or insignificant.

Annex III – Project level results

The following project is listed to be highlighted for communication purposes and as examples of best practices:

EMP171 “Role of enzymes processivity in degradation of recalcitrant polysaccharides”
Recalcitrant polysaccharides, cellulose and chitin, are abundant reservoirs of renewable organic carbon. Biorefining of these materials, to produce biofuels and commodity products contributes to the development of environment-friendly sustainable industry. Do date the processive enzymes are main components of enzyme cocktails used in enzymatic hydrolysis of cellulose and chitin. Therefore, the aim of the project was to elucidate the role of enzymes processivity in hydrolysis of recalcitrant polysaccharides, chitin and cellulose. The basis of achieving the project goals relies in combining the large and unique catalogue of enzymes available at Norwegian University of Life Sciences, with the equally unique substrate-labeling technologies and research methodologies available at the University of Tartu.

The website of the project is available at: <https://sisu.ut.ee/emp171/>.

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