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Safe Food: Increased food safety in Iceland

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Report summary

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<i>Ágríp á íslensku:</i>	<p>Nauðsynlegt að Ísland hafi fullnægjandi getu og innviði þannig að stjórnvöld og opinberir eftirlitsaðilar hafi getu til að fylgjast með því að matvælaöryggis sé gætt í samræmi við alþjóðlega staðla og reglugerðir. Verkefnið „Örugg Matvæli“ var tvíhliða verkefni milli Íslands og Þýskalands og megintilgangur þess var að auka matvælaöryggi á Íslandi og vernda neytendur með tilliti til öryggis og heilnæmis matvæla á íslenskum markaði. Verkefnið var unnin í samvinnu Matís, Matvælastofnunar (MAST) og Atvinnuvega og nýsköpunarráðuneytisins á Íslandi og þýska Matvæla og landbúnaðar-ráðuneytisins auk Lykilstofnana á sviði matvælaöryggis í Þýskalandi þ.e.a.s. Federal Institute for Risk Assessment (BfR) og Lower Saxony State Office for Consumer Protection and Food Safety (LAVES). Til að bæta innviði á Íslandi voru sérhæfð greiningartæki til rannsókna á matvælaöryggi keypt í gegnum opið útboð og sett upp í aðstöðu Matís í Reykjavík. Þýskur ráðgjafi var staðsettur á Íslandi í 6 mánuði til að veita faglega þekkingu á sviði matvælaöryggis sem nauðsynleg var fyrir framgang verkefnisins ásamt því að samhæfa vinnu í verkefninu. Þýskir sérfræðingar frá BfR og LAVES komu til Matís og Matvælastofnunar til að þjálfra sérfræðinga þessara stofnana í verkferlum sem skilgreindir voru sem forgangsatríði á sviði efnagreininga og opinbers eftirlits á sviði matvælaöryggis. Einnig voru haldnir kynningarfundir til að upplýsa helstu hagsmunaaðila á Íslandi um framgang verkefnisins og til að auka vitund þeirra um mikilvægi matvælaöryggis í allri framleiðslu- og fæðukeðjunni. Við lok verkefnisins höfðu íslenskir sérfræðingar verið þjálfaðir í verkferlum á afmörkuðum forgangsviðum við eftirlit og efnagreiningar á sviði matvælaöryggis. Verkefnið hefur því bæði stuðlað að bættri rannsóknaraðstöðu og getu beggja íslensku stofnananna hvað varðar sýnatöku og efnagreiningar á mikilvægum matvælaöryggisþáttum svo sem eftirliti með leifum plöntuvarnarefna og óæskileg efnum í matvælum og fóðri.</p>		
<i>Lykilorð á íslensku:</i>	<i>Matvælaöryggi, innviðauppbygging, rannsóknaraðstaða, matvælalöggjöf, efnagreiningar, opinbert eftirlit</i>		

<p><i>Summary in English:</i></p>	<p>To ensure a high level of protection for human health and consumers' interest in relation to food safety, it is essential that Iceland has the appropriate infrastructures to carry out inspections and official controls of food products in line with the requirements of the European food legislation. A bilateral project between Iceland and Germany was established and carried out 2014 to assist Iceland to achieve this goal. The objective of the project was to strengthen Iceland's ability to ensure food safety and protect consumer interests in relation to food safety. The bilateral project was carried out in collaboration between Matís, Icelandic Food and Veterinary Authority (MAST) and the Ministry of Industries and Innovations in Iceland from the Icelandic side and the German Federal Ministry of Food and Agriculture, Federal Institute for Risk Assessment (BfR) and Lower Saxony State Office for Consumer Protection and Food Safety (LAVES) from the German side. The laboratory infrastructure for food safety analysis in Iceland was improved by procuring new laboratory equipment through an open tender process and install them at Matís facilities in Reykjavík. A German Resident Advisor resided in Iceland for 6 months to provide the necessary professional experience in areas of food safety covered by the project and coordinate the project activities. German experts from BfR and LAVES came to Matís and MAST to train experts of these institutes in procedures identified as priority analytical and official control procedures to ensure food safety in Iceland. A number of stakeholder events were also carried out to inform key stakeholders of project activities and increase their awareness of importance of food safety in the entire food chain. At the end of the project the majority of the priority procedures were implemented at the Icelandic institutes and the Icelandic experts that participated in the project were well informed and trained. The project has therefore contributed significantly to the improvement of both institutional and laboratory capacity in Iceland concerning sampling and analysis in important areas such as monitoring for residues of plant protection products, contaminants in food and feed as well as genetically modified food and feed.</p>
<p><i>English keywords:</i></p>	<p><i>Food safety, enhancing infrastructure, laboratory capacities, food legislation, food analysis, official control</i></p>

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1 Objectives and tasks

As a target goal, the project partners agreed on the following tasks to strengthen the capabilities of Iceland in terms of:

- Increasing food safety and consumer protection through enhanced infrastructure and knowledge regarding residues of plant protection products, contaminants in food and feed and GM food and feed
- To ensure Iceland's ability to fulfil all requirements in these areas according to European legislation.

The project plan was developed from an originally planned Twinning project (12 months) that had been developed as a part of the IPA initiative established during Iceland's negotiation to become a member of the EU (draft Twinning Contract IS-11-IB-AG-01). The Twinning project was discontinued after a change in government of Iceland in April 2013 put a halt to the membership negotiation. The project was turned into a bilateral project between Iceland and Germany and the project timeframe was reduced to 6 months to minimize the cost. The tasks and responsibilities for the project were laid out in a detailed project work plan that was an essential part of the Icelandic/German bilateral contract and included a total of 5 combined results / goals with a total of 11 activities. The results and activities of the project were evaluated by objective and verified indicators.

2 Project organization and working conditions

The project organization was carried out as follows:

- **Project steering group** with the project heads (CEO of Matis and The Icelandic Food and Veterinary Authority/MAST, president of BfR and LAVES), the project managers of Matis and MAST and the German Resident Advisor (GRA) as well as his Icelandic counterpart (ICP)
- **Management group** with the project managers of Matis and MAST, the GRA, the ICP, the BfR long-term expert (LTE) and the project coordinators of BfR and LAVES.

Fundamental decisions about the project were made by the Project steering group in regular status meetings. The Management Group agreed on key issues regarding the organization of work and activities that should be carried out. This was done during regular meetings in Iceland as well as regular telephone and e-mail contact with BfR and LAVES.

The GRA organized the visits of short-term experts (STE) and their activities onsite. He was also responsible for communication concerning the training needs of the beneficiaries, MAST and Matis, in order to ensure that a suitable STE would be selected for the training. In addition, his task was to manage the implementation of activities according to the work plan in collaboration with the Icelandic project managers and to ensure the realization of the project objectives. To facilitate the laboratory capacity building at Matis the BfR established a contract with a LTE (BfR-LTE) that could e.g. assist with issues related to laboratory equipment, official testing procedures etc. onsite at Matis.

The working conditions for the GRA, the BfR-LTE and the STEs were excellent at both Matis and MAST. The friendly working atmosphere and the open, goal-oriented cooperation of all participants formed the basis for the success of the project.

The support of the project by the relevant ministries (IS MII, D-BMEL) and the German Embassy in Reykjavik had a very positive effect on the outcome of the project.

3 Project results and reports

Altogether, 23 STEs from BfR and LAVES, 1 LTE from BfR and the GRA participated in the project with a total of 317 working days. The project objective and their implementation is shown in Figure 1.

Figure 1: All agreed project objectives (results and activities) were implemented at Matis and MAST

Results of the bilateral project		
Activities related to Results		
Ref. to result A: (Matis)	1) Participation at the provisional acceptance and implementing of equipment	100 %
Ref. to result B: (Matis)	2) Training Needs Assessment for Matis staff	100 %
	3) Develop training strategy, training courses and training materials	100 %
	4) Conduct training of selected Matis laboratory staff	Biog.Amine, MB
	5) Assessment of the competence of the trainees in selected procedures	PPP, ndl PCBs, PAHs, GM 85 %
Ref. to result C: (MAST)	6) Develop training strategy, training courses and training materials	100 %
	7) Conduct training of selected staff	100 %
	8) Assessment of the knowledge of the trainees in legislative, technical and administrative issues	Study visit/LAVES
Ref. to result D: (Matis) (MAST)	9) Drafting analytical procedures with Matis staff and integrate procedures into Matis Quality Manual.	85 %
	10) Development of documented control procedures for MAST and preparing them for integration in MAST's Quality Manual	In progress
Ref. to result E: (Matis) (MAST)	11) To increase awareness among stakeholders on food safety and consumer protection issues	4 x Stakeholder meeting

Matis

The prerequisite for the realization of the project was the **complete delivery and the implementation of new analytical equipment at Matis** i.e. 2 x LC-MS / MS, 1 x GC-MS / MS, 1 x UHPLC, as well as extensive equipment and software training. The up to 6 weeks delayed delivery and implementation of devices from the manufacturers/suppliers required careful streamlining of the entire schedule for all project activities. The certification of the equipment and the training by the suppliers were coordinated by the GRA. The BfR-LTE was responsible for providing the theoretical basic for the new analytical technique. Instructions for the appropriate extension of the laboratory structure and for the purchase of useful laboratory equipment were also provided by the GRA and the BfR-LTE. In addition, the GRA

supported the purchase of 2 systems for genetic studies (BioMark system, MaltiTOF-Biotyper). SOP's (English version) regarding the use and maintenance for all new laboratory equipment were drafted. **This activity was completed to 100%.**

The Training Needs Assessment for the 8 new laboratory methods at Matis for food control was carried out by the GRA and the BfR-LTE. Training strategies for the STEs visits were also developed. At the same time various preparations for the implementation of these 8 new methods were carried out e.g. installation of additional equipment, ordering standards, chemicals and other consumables to be able to implement these methods at Matis. The BfR and LAVES provided additionally standards for the substances to be tested, comparative samples and special chemicals. The heavy metal analysis required no training, since this methodology is already accredited according to EU standards at Matis. **This activity was completed to 100%.**

The implementation of new laboratory methods with regard to residues and contaminants in food and GM food and feed was ensured by the STEs of BfR and LAVES in co-operation with the GRA and the BfR-LTE, as well as the assigned Matis specialists. The 7 new laboratory methods were trained and implemented during 12 STE visits. During the reporting period, the visits for the methods "biogenic amines", "pesticides", "Marine biotoxins / DSP ASP PSP", "PAHs", "nd IPCBs", "Mycotoxins" and "GM food and feed" showed positive results. Reports on the start and the final meetings as well as mission reports based on all STE visits at Matis are available. These documents can be used for the QM audits and the accreditation according to EN/ISO 17025. In addition, Matis received extensive information material regarding documentation, validation and quality assurance from BfR and LAVES for all new laboratory methods. **These activities were completed to 93%. The 2nd STE visit for mycotoxins is still outstanding.**

SOP's (English version) for all new methods were developed and provisions for method validation were made as the basis for accreditation. The methods "biogenic amines" and "pesticides" were prepared for an external audit in September 2014 by an accreditation body from SWEDAC. **This activity was completed to 100%.**

14 STEs in total visited Matis during the project period (7 from LAVES, 7 from BfR). All Matis laboratory staff received training certificates on the new methods they had been trained to perform using the new analytical techniques. The cooperation between Matis and MAST as part of the official food monitoring in Iceland was supported by the GRA during special tuning consultations regarding the project content (esp. PPPs, PAHs and marine biotoxins).

MAST

The project contents were discussed and agreed on during several preliminary discussion sessions with MAST and the local competent authorities (LCAs). On the basis of a comprehensive **Training Needs Assessment**, the training strategy and the training plan for 3 workshops intended for both MAST senior level staff and MAST and LCAs control staff, as well as a study visit to LAVES and BVL were organized. **These activities were all 100% completed.**

The first MAST workshop was completed successfully in April 2014. The workshop focused on the basics of risk assessment, risk management and risk communication for residues of plant protection products and contaminants in food and feed, as well as for legal issues concerning GM food and feed monitoring. Furthermore, presentations were given concerning quality management within the scope of official controls and handling with statutory violations according to German regulations. A total of 24 MAST, LCA and Matis staff participated in the 3 day workshop.

The second MAST workshop was held in May 2014. The workshop focused on sampling procedures, sampling, analytical methods, evaluation of results and reports for residues (PPPs, veterinary drug) and contaminants (heavy metals, mycotoxins, PAHs, PCBs / dioxins, biogenic amines) in food and feed. The evaluation of the results and subsequent enforcement actions were explained using practical examples of non-compliance of the results. The IT-based database / data server in Germany (BVL, Federal States) for planning samples, sampling, evaluation of results, for on-site monitoring and reporting was presented comprehensively. The risk management and risk communication, particularly during a crisis situation, was also presented through factual examples and experiences. A total of 34 MAST, LCAs and Matis staff participated in the 3 day workshop.

The third MAST workshop was held in June 2014. The workshop focused on sampling procedures, sampling, analytical methods, evaluation of results and reporting concerning genetically modified food and feed and marine biotoxins. The evaluation of results and subsequent enforcement actions were explained using practical examples of non-compliances. Total of 18 MAST and Matis staff participated in the 3 day workshop.

A total of 9 STEs visited MAST during the reporting period (7 from LAVES, 2 from BfR). All participants in the workshops (MAST, LCA's, Matis) received all presentations and other training material during the course of the workshop. The participants of the workshops will receive a certificate verifying the completion of the training for each workshop. The project results were also presented in meetings in the district areas of MAST.

The project ended with a very successful **study visit** by 4 MAST employees and 1 LCA employee in Germany at LAVES. The main focus of the study visit was to familiarize the MAST and LCA experts with the procedures for sampling and official controls in Lower-Saxony and in Germany for GM- food and feed, residues of plant protection products and contaminants in food and feed and to give practical insights into their application in practice. The BVL was also visited and the focus there was to provide information on national strategies and procedures, focusing on the MNKP, NRKP, Buep, LM-monitoring and the BVL data server / FIS-VL. **These activities regarding workshops, training and study visit were completed to 100%.**

The development of new documented procedures and updates of documents in the quality system concerning the monitoring PPP residues and contaminants in food and feed, including the monitoring of genetically modified food and feed **could not be implemented during the project period time** (capacity reasons) and is still pending. Comparable documentation from LAVES for food and feed monitoring and control in Lower Saxony has been sent. Another STE-visit at MAST has been agreed but final arrangements have yet to be made.

Stakeholder meeting /Public relations

Two kick-off meetings were held in Reykjavik and Selfoss at the beginning of the project (Feb. 6th 2014) to increase the awareness of stakeholders about food safety and consumer protection issues and the importance of sampling and monitoring in the focus areas of the project. These meetings were organized and performed with the participation of BMEL, BfR (key note speaker of the meetings), LAVES, Matis and MAST. A total of 90 to 100 participants, including the IS-Minister of Fisheries and Agriculture and the IS-Director General of the Ministry of Industry and Innovation (MII) confirmed the success of these events.

The newly established residue laboratory at Matis was officially opened by the IS-Minister of Fisheries and Agriculture and the German Ambassador in May 2014 in the presence of the project group, directors of Matis and MAST, Matis board members, Matis and MAST staff as well as the media.

At the MAST annual meeting in April 2014 with approximately 60-70 participants, the new laboratory capacities at Matis were presented as well as the new opportunities they provided for monitoring food safety.

At the end of the project (June 25th 2014) the **final stakeholder meeting was merged with the Nordic Bioeconomy Conference of the Nordic countries in Selfoss** and was attended by the project group, presidents of the BfR (keynote speaker of the meeting) and LAVES (key speaker of the panel discussion). A total of 100-110 participants (including the IS-Minister of MII, the IS- Director General of MII and the German Ambassador) were informed about the project results during this event.

In addition, public awareness of the bilateral project was promoted on several occasions both in Germany and in Iceland. This included press releases at the beginning and the end of the project as well as three articles in the press during the course of the project, four TV interviews and four radio interviews in Iceland. A logo "Safe Food" was developed for the project. Regular reports on the bilateral project "Safe Food" were published on the homepages at Matis, at MAST and at the German Embassy in Reykjavik. **These activities concerning dissemination of the project were completed to 100%.**

Financing

The project was funded as planned by the IS-MII (purchasing new laboratory equipment), by Matis and MAST (cost for accommodation for STEs from LAVES, working hours of Matis and MAST staff, travel expenses for STEs and Icelandic experts, purchase of reference materials etc. for Matis laboratories, office supplies etc. for GRA and BfR-LTE), by the BMEL (financing of the GRA) and by BfR and LAVES (exemption and financing the LTE/STE missions and project meetings).

Project reports

The project steering group held three project meetings (kick-off meeting, mid-term meeting and final meeting) during the project period. In addition, there were three internal project meetings with Matis, MAST and GRA to evaluate the progress of the work and fine-tune the project steps.

The final presentations given by GRA and representatives from Matis and MAST at the final meetings and six regular reports on project status are included as appendixes to this report. In addition, the schedule for all the project activities for the entire project period is attached. A continuous project controlling with respect to the results and activities in accordance with Annex 1 to the project agreement was carried out by the GRA.

4 Summary assessment and recommendations

The bilateral project Iceland-Germany to strengthen the institutional and laboratory capacity in the field of food safety in Iceland has contributed significantly to the improvement in the official food and feed control as well in the consumer protection. By enhancing the laboratory capacity for analysis of residues, contaminants and genetically modified food and feed at Matis the necessary analysis required by the EU legislation can now be performed nationally. The training courses at MAST and LCAs by the BfR and LAVES experts as well as the study visit, provided new insights and knowledge important for the organization of official controls on food and feed in these areas. Consequently Iceland is now better equipped for monitoring food and feed according to the European legal framework. At the final meeting, which was attended by the IS-Minister for fisheries and agriculture and the German ambassador, all project partners confirmed the successful implementation of the agreed project objectives and the associated improvement of capacity, infrastructure and knowledge. Through increased national laboratory capacity and enhanced knowledge in these fields Iceland is now in a better position concerning global trade conditions of Icelandic food.

For the sustainability of the project results a few key recommendations for the project partners are pronounced:

- Continuation of cooperation on the basis of the existing agreement between BfR / D and Matis-MAST / IS involving LAVES / D. An annual work plan should be developed and agreed upon
- Complete validation of the new analytical methods and completion of quality documents for extension of accreditation according to EN / ISO 17025 by Matis
- Expansion of the laboratory capacity at Matis i.e. 1 additional room for preparation of samples concerning residues and contaminants, 1 separate room for PCR analysis concerning GMO
- Development of the man power of the residue laboratory at Matis i.e. add 1 specialist for validation and quality management, add 1 technician for preparation of samples for residues and contaminants
- Purchase of necessary laboratory equipment to increase the efficiency and the quality of the sample preparation for residue and contaminant analysis at Matis (see appendix)
- Study visit at BfR/GMO laboratory and LAVES/PPP's laboratory by Matis staff

- Development of new documents and improvement of existing work procedures for the official controls (both at MAST and the LCAs) concerning the monitoring of residues and contaminants as well as genetically modified food and feed based
- Study visit at BfR summer school 2015 "Risk assessment" by Matis and MAST staff.



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Distributor:

Project partner (Matis, MAST, BfR, LAVES)

D-BMEL, IS-MII

German Embassy/Reykjavik, Icelandic Embassy/Berlin

GRA, on file

Appendix 1

Requirements for the residue and the genetic laboratories (based on STE-Mission reports)

1 Requirements for the residue laboratory

Focus on new Methods:

- PPP's - QuEChERS-method by means of LC-MS/MS; official German § 64 LFGB food testing method L 00.00- 115/EN 15662:2008 for 300 substances
- Mycotoxins – Fusariumtoxins DON, ZEA, HT-2 and T-2 by means of LC-MS/MS; BfR NRL method, reg. (EC) 401/2006
- Marine Biotoxins - DSP and ASP in 1 method (ASP as screening); BfR NRL method/European standard prEN 16203:2010 by means of LC-MS/MS- lipophilic marine biotoxins; PSP by means of HPLC; method of BfR and AOAC method 2005.06; reg. (EC) No 1664/2006.
- Biogenic Amins- tyramine, putrescine, cadaverine and histamine by means of HPLC; official German § 64 LFGB food testing method L 10.00–5
- PAH - PAH4 accordingly to reg. (EU) No 835/2011 by means of GC-MS/MS; official LAVES method (with high fat - you need more space in the lab for fat extraction and clean up)
- ndl PCB – PCB's accordingly to reg. (EU) No 252/2012 by means of GC-MS/MS; official NRL BfR method (you need more space in the lab for fat extraction and more glass materials)

Equipment and consumables that are considered necessary (ranked)

1. Centrifuge and different accessories
2. Ultra-Turrax, more rods
3. Ultrasonic bath
4. Water bath
5. Rotarvapor
6. pH-Meter with glas electrode / buffer solutions and micro electrode
7. Glass ware (cooler, bulb, bigger bottles >1L for HPLC, vials with screw cap)
8. Glass Block for SPE vacuum manifold
9. Brown glass (vials, bottles, volumetric flask)
10. Some accessories for the measurement instruments (ferrules, capillaries, septa, inserts, calibration solutions, filter for the mobile phase)
11. Stock of pure substances and organic solutions (LC-MS-Quality), HPLC-columns (C8; C 18, phenyl-hexyl)
12. Standards for all substances of new methods (for validation and quality control)

One additional room for preparation of samples concerning residues and contaminants

2 Requirements for the genetic laboratory

Focus on new method:

- GMO food: GMO's (maize event MON 810 / Roundup ready soybean event GTS-40-3-2) by means of PCR; official method ISO/FDIS 21570:2013/08

Equipment and consumables that are considered necessary:

1. GMO-standards for special events (specification by MAST)

A special room for extraction of DNA/RNA for GMO-PCR

Notice:

The general requirements such as the additional laboratory space and the development of human resources at Matis are very important by the official control in the field of food safety to carry out this responsibility for the Icelandic authorities MAST and LCAs.



Reykjavik, 02.07.2014

Dorothea Majohr/ BfR-LTE