CHAMBRE DES DEPUTES

Session ordinaire 2011-2012

CH/vg

Commission de l'Enseignement supérieur, de la Recherche, des Media, des Communications et de l'Espace

Procès-verbal de la réunion du 07 juin 2012

ORDRE DU JOUR :

1. Présentation des évaluations de 2011 des centres de recherche publics
2. Divers

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Présents : M. Claude Adam, Mme Diane Adehm, M. Eugène Berger, M. Jean Colombera, Mme Claudia Dall'Agnol, Mme Christine Doerner, M. Ben Fayot, M. Claude Haagen, M. Norbert Haupert, Mme Lydie Polfer remplaçant Mme Anne Brasseur, M. Serge Wilmes

M. Pierre Decker, M. Léon Diederich, Mme Josiane Entringer, M. Robert Kerger, du Ministère de l'Enseignement supérieur et de la Recherche
Dr Stefan Rieder, de la société *Interface*

Mme Christiane Huberty, de l'Administration parlementaire

Excusés : Mme Anne Brasseur, M. Marcel Oberweis

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Présidence : M. Ben Fayot, Vice-Président de la Commission

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1. Présentation des évaluations de 2011 des centres de recherche publics

Rappelons que lors de sa réunion du 4 juillet 2011, la Commission s'est vu présenter, par les représentants des experts-évaluateurs, les principaux résultats d'une première évaluation externe réalisée, en 2010, auprès des instituts de recherche publics luxembourgeois, ainsi

que les recommandations émises par les experts sur base de leurs conclusions. Prévue dans les contrats de performance que l'Etat a conclus en 2008 avec les institutions publiques de recherche, ainsi qu'avec le Fonds National de la Recherche (FNR), cette évaluation devrait servir à la fois aux institutions mêmes et au Ministère de l'Enseignement supérieur et de la Recherche. Ce dernier en a tiré un certain nombre de conclusions non seulement pour la génération actuelle des contrats de performance, mais aussi en vue d'une réforme de la législation relative à la recherche publique.
Avaient été soumis à cette première évaluation des départements choisis des Centres de Recherche Publics (ci-après : CRP) Gabriel Lippmann, Henri Tudor et Santé, du Centre d'Etudes de Populations, de Pauvreté et de Politiques Socio-Economiques (CEPS) et du Centre Virtuel de la Connaissance sur l'Europe (CVCE), ainsi que le Fonds National de la Recherche, établissements publics qui relèvent tous du Ministère de l'Enseignement supérieur et de la Recherche.
Suite à cette présentation, la Commission de l'Enseignement supérieur, de la Recherche, des Media, des Communications et de l'Espace avait procédé à des entrevues avec les responsables des différents centres concernés (cf. procès-verbaux des réunions des 14 et 24 novembre 2011 et du 22 mars 2012).

La présente réunion est consacrée à la deuxième vague d'évaluations réalisée en 2011 auprès d'autres unités choisies des CRP Gabriel Lippmann, Henri Tudor et Santé, ainsi que du CEPS.

A l'aide d'un document *PowerPoint*, M. Stefan Rieder de la société *Interface*, société responsable de l'organisation de l'évaluation, présente les principaux résultats et conclusions de l'évaluation de 2011. A cet effet, il est renvoyé à la présentation annexée au présent procès-verbal (cf. annexe 1).
A préciser que les membres de la Commission se sont vu transmettre au préalable, par courrier électronique du 5 juin 2012, les rapports d'évaluation des unités en cause ainsi que les prises de position respectives des centres concernés (cf. annexe 2). Dans le cadre de la présente réunion, des exemplaires imprimés sont en outre mis à leur disposition.

La présentation proposée s'articule autour des axes suivants :

- D'un point de vue méthodologique, il convient de rappeler que l'évaluation en question est fondée sur le principe de la *peer review*, c'est-à-dire de l'analyse par des pairs, dans la mesure où ce sont à chaque fois trois à quatre experts spécialisés dans le même domaine de recherche qui évaluent les unités en question (cf. diapositive 3 de la présentation annexée).

- La diapositive 3 fournit en outre un aperçu sur les départements des quatre centres de recherche précités qui ont fait l'objet des évaluations respectives de 2010 et de 2011. En 2011 ont été évaluées les unités suivantes :

- les unités de recherche GEOSAT (Géohydrosystèmes et aménagement du territoire) et ECOSAT (Ecosystèmes aquatiques et terrestres) du département « Environnement et Agro-Biotechnologies » du CRP Gabriel Lippmann ; ces unités occupent quelque 45 personnes en équivalent plein temps et disposent d'un budget de quelque 5 millions d'euros ;
- le département « Centre de Ressources des Technologies pour l'Environnement » (CRTE) du CRP Henri Tudor ; ce département occupe quelque 41 personnes en équivalent plein temps et dispose d'un budget de quelque 4 millions d'euros ;
- le Laboratoire de recherche cardiovasculaire du CRP Santé ; ce laboratoire occupe quelque 20 personnes en équivalent plein temps et dispose d'un budget de quelque 1,6 million d'euros ;

- le Pôle Géographie et Développement (GEODE) du CEPS/INSTEAD ; ce département occupe quelque 24 personnes en équivalent plein temps et dispose d'un budget de quelque 2,4 millions d'euros.

- Les diapositives 4 à 7 présentent, pour chaque unité concernée, les principaux résultats et conclusions de l'évaluation, ainsi que des recommandations émises à chaque fois par les experts-évaluateurs.

- La diapositive 8 propose une comparaison des résultats des évaluations de 2010 avec ceux de l'exercice 2011. Il en ressort que, *grosso modo*, les unités évaluées en 2011 ont obtenu de meilleurs résultats, notamment en ce qui concerne leur orientation en termes de stratégie et de recherche, la coopération avec des acteurs externes, ainsi que la qualité et la quantité de l'*output* scientifique et des prestations de services.
L'ensemble des huit unités évaluées en 2010 et 2011, et surtout les centres de recherche dont elles font partie, se trouvent dans une phase de transition, dans la mesure où ils sont appelés à ne plus faire figure de simples prestataires de services, mais à évoluer vers des institutions qui à la fois fournissent des services et effectuent des recherches. Les unités évaluées se situent ainsi à l'intersection entre recherche fondamentale et recherche appliquée, entre recherche académique et recherche et développement technologique centrés sur les besoins de la société ou de l'industrie. Le schéma de la diapositive 9 représente le positionnement respectif des huit unités évaluées en 2010 et 2011. Il en résulte que les centres de recherche sont amenés à accomplir un exercice d'équilibre fort délicat. Il s'agit d'un grand défi qui recèle en même temps un potentiel considérable.
A la diapositive 10 sont énumérées les conclusions et les conséquences résultant du positionnement des unités de recherche tel que décrit aux deux diapositives précédentes. A souligner dans ce contexte que le positionnement d'une unité par rapport aux deux pôles constitués par la recherche fondamentale, d'une part, et la recherche appliquée, d'autre part, n'implique nullement un jugement de valeur. Ce qui importe pour chaque unité, c'est d'opérer un choix conscient en matière de positionnement et de se doter d'une stratégie clairement définie.

Echange de vues

De l'échange de vues subséquent, il y a lieu de retenir succinctement les éléments suivants :

- Il est rappelé que dans les années 1980, la recherche s'est développée au Luxembourg en fonction des intérêts et des spécialisations des personnes initiatrices, ainsi qu'au gré des missions qu'elle s'est vu confier progressivement. A l'heure actuelle, le moment est venu de clarifier l'orientation stratégique des différents acteurs.

- Les représentants gouvernementaux précisent en relation avec l'acte d'équilibre entre recherche fondamentale et recherche appliquée voire transfert technologique, que ce sont essentiellement les centres de recherche en tant que tels qui sont amenés à accomplir cet exercice. Quant aux différentes unités de ces centres, elles sont appelées à se doter d'un profil net en vue de s'inscrire clairement dans le concept général de l'institution en question. Il va sans dire que ce profil pourra subir des modifications au fil du temps.

- Il est relevé que dans leurs prises de position respectives au sujet des évaluations de 2011, les différents centres de recherche font preuve de réactions plus positives qu'en 2010. De fait, le processus même de l'évaluation n'est plus remis en cause. Il en ressort également que certaines recommandations d'ordre pratique émises par les experts-évaluateurs ont entraîné d'ores et déjà l'initiation de mesures adéquates (cf. problème en relation avec la surface de bureaux disponible pour les collaborateurs du Laboratoire de recherche cardiovasculaire du CRP Santé).

- Comme il ressort des différents rapports ainsi que de la présentation de M. Stefan Rieder que les résultats de l'évaluation de 2011 sont globalement plus positifs que ceux de 2010, il se pose la question de savoir si cela tient au fait que les unités examinées en 2011 sont mieux organisées d'un point de vue scientifique et matériel que celles analysées en 2010, ou si ce résultat est dû au fait que des leçons ont pu être tirées de l'expérience de 2010, de sorte qu'en 2011, les unités ont su mieux se présenter aux experts-évaluateurs.
En réponse, M. Stefan Rieder estime qu'il se trouve que les *outputs* scientifiques des quatre unités évaluées en 2011 sont effectivement supérieurs et que celles-ci sont éventuellement aussi mieux organisées. D'un autre côté, il est vrai que tous les acteurs ont pu tirer des enseignements de l'expérience de 2010. Les unités concernées en 2011 étaient sans doute mieux préparées et aussi plus disposées à s'impliquer activement dans le processus d'évaluation, ce dont témoigne la meilleure qualité des rapports d'autoévaluation. L'on peut par ailleurs se demander si les premières unités qui avaient été soumises à l'évaluation en 2010 n'avaient pas été choisies délibérément, dans la mesure où y étaient liées un certain nombre de problématiques connues d'avance. En tout état de cause, les meilleurs résultats de 2011 ne s'expliquent pas uniquement par des facteurs d'ordre méthodologique, les unités examinées ayant effectivement fait preuve de performances fort positives.

- Il est confirmé que les résultats des évaluations de 2010 et de 2011 ont contribué au processus de réflexion ayant débouché sur la décision des CRP Gabriel Lippmann et Henri Tudor de fusionner et de regrouper ainsi leurs activités de recherche, de développement et d'innovation, démarche que le Ministère de l'Enseignement supérieur et de la Recherche ne peut que saluer et encourager. De fait, dans le cadre des deux évaluations, les différents experts ont insisté sur la nécessité pour les centres précités de renforcer les synergies entre les unités évaluées, à la fois au niveau des activités de recherche et des infrastructures.
M. Stefan Rieder fait valoir qu'aux yeux des experts, cette fusion constitue sans doute une grande chance pour les deux centres qu'il convient de mettre à profit.
En réponse à la question de savoir s'il serait opportun de favoriser également un rapprochement entre le CEPS et les deux centres concernés par la fusion, l'orateur estime qu'il existe un potentiel de coopération considérable, étant donné que dans certains domaines de recherche, il serait indiqué d'adjoindre le point de vue des sciences sociales à celui des sciences naturelles. Dans des domaines choisis, le CEPS pourrait ainsi participer à des projets interdisciplinaires. L'intervenant est toutefois plus réticent en ce qui concerne l'idée d'une fusion.

- Pour ce qui est des relations des unités de recherche visées avec l'Université du Luxembourg, il convient de préciser qu'un certain nombre d'initiatives de coopération fonctionnent d'ores et déjà. Il serait toutefois indiqué de développer davantage cette collaboration.
Dans ce contexte, il est signalé que la Vice-Rectrice en charge de la Recherche de l'Université du Luxembourg a participé, sur invitation du Ministère de l'Enseignement supérieur et de la Recherche, à l'échange contradictoire au sujet du projet de rapport d'évaluation concernant le département « Centre de Ressources des Technologies pour l'Environnement » du CRP Henri Tudor. Il s'agissait de dégager ainsi les coopérations existantes ainsi que les possibilités de renforcer encore cette coopération.
M. Stefan Rieder fait valoir qu'il lui semble très utile de disposer, à côté de l'Université, d'instituts ou de centres se trouvant à l'intersection entre recherche fondamentale et recherche appliquée. Les centres de recherche en cause pourront en effet se distinguer dans un contexte international s'ils parviennent à affiner leur profil. Il plaide ainsi pour leur accorder un délai d'au moins dix ans au cours duquel ils pourront s'appliquer à gagner en profil. Il ne faut pas non plus perdre de vue que si les centres de recherche et l'Université coopèrent dans le domaine de l'enseignement et dans le cadre de projets de recherche, ces acteurs se trouvent néanmoins dans une situation de concurrence en ce qui concerne le personnel scientifique, les finances et l'influence auprès des décideurs politiques. Dans cette

optique, la voie retenue d'une coopération renforcée n'allant toutefois pas jusqu'à la fusion semble prometteuse à l'intervenant.
Les représentants gouvernementaux ajoutent qu'en vue de favoriser la coopération des centres de recherche publics avec l'Université du Luxembourg, un des critères à prendre désormais en considération lors de l'occupation de postes dirigeants dans ces centres consistera à vérifier si la personne en question possède les compétences et les qualifications académiques lui permettant de faire figure de professeur invité à l'Université.

- Suite à une question y relative, il est expliqué que l'évaluation des activités de recherche menées par l'Université elle-même fait partie intégrante de l'évaluation externe périodique de l'Université prévue par la loi modifiée du 12 août 2003 portant création de l'Université du Luxembourg.

- Pour ce qui est de la collaboration du Laboratoire de recherche cardiovasculaire du CRP Santé avec le domaine clinique, M. Stefan Rieder signale que ce lien est assuré essentiellement par la personne du dirigeant du laboratoire. Compte tenu de la charge de travail considérable qui pèse ainsi sur le responsable, les experts estiment qu'il serait opportun pour le laboratoire de disposer d'une seconde personne présentant un profil équivalent et qui puisse ainsi contribuer à assurer la jonction avec l'hôpital.
La question d'une intégration du laboratoire à l'hôpital a été discutée par les experts-évaluateurs, mais la possibilité d'une telle option n'a pas été approfondie.
Même si le manque de place au niveau des bureaux signalé par les experts est à mettre en relation avec la volonté de favoriser la collaboration du laboratoire avec l'hôpital par le biais de la proximité géographique, l'orateur défend le point de vue que cette situation n'est guère acceptable. En tout état de cause, ce problème d'ordre matériel est désormais connu et reconnu, et des solutions sont en voie d'élaboration.

- Pour ce qui est du CVCE (Centre Virtuel de la Connaissance sur l'Europe), il a été proposé, suite à l'évaluation d'un département de ce centre en 2010, de soumettre le CVCE à une évaluation globale portant sur son positionnement général. Cette évaluation est en voie de préparation. Elle se déroulera dans la seconde moitié de 2012, et les résultats en seront disponibles au cours du premier semestre 2013.

- Quant au CEPS, il a été retenu de faire réaliser une étude stratégique pour définir les orientations futures du centre. Cette étude permettra de (re)positionner le CEPS au sein du dispositif national de la recherche publique, tout en prenant en considération les changements majeurs au niveau de la recherche dans le domaine des sciences sociales.
Le cahier des charges pour l'étude visée a été élaboré en concertation avec le CEPS, et l'étude obéira à un schéma clairement défini. Au-delà du CEPS lui-même, un certain nombre de *stakeholders* (cf. ministères avec lesquels coopère le CEPS ; STATEC ; organisations privées) seront également impliqués dans ce processus.
Au niveau des ressources humaines, il sera veillé à ce que le nouveau directeur général du CEPS puisse aussi occuper un poste de professeur invité à l'Université du Luxembourg. En outre, sur base des recommandations émises par les experts-évaluateurs, il est procédé au recrutement d'un responsable financier.

- Il est encore constaté que les experts-évaluateurs relèvent, au sujet des unités de recherche GEOSAT et ECOSAT du CRP Gabriel Lippmann, qu'elles n'ont pas réussi, au cours des trois dernières années, à obtenir de nombreux financements européens, et ce en dépit de leurs multiples atouts scientifiques et matériels (cf. rapport d'évaluation p. 5 : « *GEOSAT and ECOSAT are engaged in different consortia with which they have participated in submitting tenders to the European Framework Programmes. In the last three years, however, they have not been very successful at obtaining European funds.* »). Quelles pourraient en être les raisons ?

En réponse, M. Stefan Rieder souligne que les unités précitées entreprennent bel et bien des tentatives pour obtenir des financements européens. Les experts-évaluateurs ont d'ailleurs examiné les sujets des projets soumis et en sont arrivés à la conclusion que ces sujets étaient tout à fait valables. Ils ont toutefois signalé qu'au vu de leur petite taille, il n'est guère aisé pour ces unités d'assumer le *leadership* d'un projet subventionné dans le cadre d'un programme européen. Les experts ont néanmoins recommandé à ces unités de poursuivre leurs efforts. En effet, compte tenu entre autres des conditions matérielles favorables qu'elles peuvent offrir (cf. équipement de pointe, bonnes conditions salariales, etc.), il devrait leur être possible de se forger peu à peu une réputation leur permettant au moins de faire figure de *co-leader* dans un projet européen.
Les responsables gouvernementaux observent qu'alors que le Luxembourg était bien représenté dans les 4e et 5e programmes-cadres de recherche et de développement technologique de l'UE, cette participation s'est réduite dans le 6e programme-cadre pour diminuer encore davantage dans le 7e. Il est vrai que la charge administrative considérable qui va de pair avec une candidature peut revêtir d'emblée un effet dissuasif. Quant aux taux de réussite, la taille et l'impact de l'institution qui introduit un projet peuvent jouer un rôle considérable. Dans cette optique, la fusion prévue des CRP Gabriel Lippmann et Henri Tudor est susceptible d'augmenter les chances de succès. En outre, il ne faut pas oublier que les contrats de performance actuels conclus avec les centres de recherche publics disposent qu'une certaine part du financement doit être obtenue par la participation à des programmes du 7e programme-cadre.
Suite à un questionnement afférent, il est rappelé que l'Agence Nationale pour la Promotion de l'Innovation et de la Recherche *Luxinnovation* fait fonction de point de contact national pour les programmes européens de cofinancement de la recherche, entre autres pour le 7e programme-cadre de recherche. Cette agence informe, conseille et soutient les porteurs de projets, y compris les centres de recherche publics, désireux de participer à de tels programmes, tout en facilitant les contacts avec les responsables au niveau européen.

2. Divers

La prochaine réunion de la Commission aura lieu le **lundi 11 juin 2012, à 10.30 heures**.

Luxembourg, le 15 juin 2012

La Secrétaire, Christiane Huberty	Le Vice-Président, Ben Fayot

Annexes :

1. Présentation « Evaluation von Forschungseinrichtungen in Luxemburg. Ergebnisse aus Peer-Reviews im Auftrag des Ministeriums für Höhere Bildung und Forschung, Luxemburg »

2. Rapports d'évaluation des centres de recherche publics et prises de position des centres concernés

Evaluation von Forschungseinrichtungen in Luxemburg

Ergebnisse aus Peer-Reviews im Auftrag des Ministeriums für Höhere Bildung und Forschung, Luxemburg

Präsentation vor der Parlamentskommission am 7. Juni 2012

Dr. Stefan Rieder

Verantwortlicher für die Durchführung der Evaluation

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Inhalt

1. Einleitung

2. Ergebnisse der Evaluation 2011

3. Vergleich der Evaluationsergebnisse 2010 und 2012

4. Folgerungen

1 Einleitung

Methode

- Peer-Review mit jeweils drei unabhängigen Experten
- Jährliche Evaluation je eines Departements der vier öffentlichen Forschungseinrichtungen CRP Gabriel Lippmann, CRP Henri Tudor, CRP Santé, CEPS/INSTEAD

Evaluationseinheiten

	2010	2011
CRP GL	Science et Analyse des Matériaux (SAM)	Geohydrosystems and land-use management (GEOSAT), Aquatic and terrestrial ecosystems (ECOSAT)
CRP HT	Advanced Materials and Structures (AMS)	Resource Centre for Environmental Technologies (CRTE)
CRP Santé	Department of Oncology	Laboratory of Cardiovascular Research
CEPS/ Instead	Population et Emploi (P&E)	Geography and Development (GEODE)

2 GEOSAT/ECOSAT (CRP Gabriel Lippmann): Gesamtergebnis positiv

Positive Befunde

- Klare **Forschungsstrategie** und gute Wahl der **Forschungsthemen**
- Ausgewogene **Finanzierung** (Verhältnis Grundfinanzierung, Drittmittel)
- Hochmotiviertes **Team**
- Hohe **Qualität** der wissenschaftlichen Publikationen und der Dienstleistungen

Kritische Befunde

- **Doppelspurigkeiten** und fehlende Kooperation mit CRTE (CRP HT)
- Hohe **Belastung** der Kader
- Grosse Investitionen in die Sammlung von **Datensätzen** (z.B. Hydrologischer Atlas) mit unklarem Nutzen für die wissenschaftliche Leistung

Empfehlungen

- Verstärkung der **Zusammenarbeit** mit CRTE und der Universität Luxemburg
- Überprüfung der Investitionen in die **Datensammlung** /Erforschung Diatome
- Zügige Umsetzung der geplanten **Strukturreform**
- Vermehrte Investitionen in **interdisziplinäre Projekte** mit Sozialwissenschaften

2 CRTE (CRP Henri Tudor): Gesamtergebnis positiv

Positive Befunde

- Etablierte sich erfolgreich als **Schnittstelle** zwischen Wissenschaft und Praxis
- Hohe **Qualität** der Dienstleistungen
- Ausgewogene **Finanzierung** (Verhältnis Grundfinanzierung, Drittmittel)
- Hochmotiviertes **Team**

Kritische Befunde

- **Doppelspurigkeiten** und fehlende Kooperation mit ECOSAT/GEOSAT (CRP GL)
- **Forschungsagenda** ohne klare und überzeugende Schwerpunkte
- Geringer Umfang des **wissenschaftlichen Outputs** (Publikationen)

Empfehlungen

- Verstärkung der **Zusammenarbeit** mit ECOSAT/GEOSAT/ Uni Luxemburg
- Klare **Forschungsstrategie** entwickeln und wissenschaftlichen Nachwuchs gezielt fördern
- Vereinfachung der **Organisation**
- **Basisinfrastruktur** sicherstellen

2 Cardiovascular Research (CRP Santé): Gesamtergebnis eher positiv

Positive Befunde

- Erfolgversprechende **Forschungsagenda**
- **Patientendatenbank** mit grossem wissenschaftlichem Wert
- Gute **Kooperation** mit Universitäten
- Wertvolle Beiträge im **wissenschaftlichen** und im **klinischen Bereich**

Kritische Befunde

- Ungenügende interne **Organisation**
- Schwache Einbindung des **Forschungsteams** in die Entwicklung der Forschungsagenda
- Nicht akzeptable räumliche Verhältnisse bei den **Büroarbeitsplätzen**

Empfehlungen

- Sofortige Beschaffung **zusätzlicher Arbeitsplätze**
- **„System Biology“** als erfolgversprechenden Forschungsschwerpunkt ausbauen
- **Patientendatenbank** weiter pflegen und verstärkt wissenschaftlich verwerten
- **Einbezug der Mitarbeitenden** bei der Entwicklung des neuen Organigramms und der neuen Forschungsagenda stärken
- **Engpässe** in der Zusammenarbeit mit dem Spital beseitigen

2 GEODE (CEPS/ Instead): Gesamtergebnis ambivalent

Positive Befunde

- Erfolgversprechende **Forschungsagenda**
- **Hochmotiviertes Team**
- Quantitativ und qualitativ **guter Output** (wissenschaftliche Beiträge und Dienstleistungen)
- Gute **Kooperation** mit ausländischen Universitäten

Kritische Befunde

- Unklare **Einbettung** in die Forschungsagenda von CEPS
- **Finanzielles Führungssystem** auf Stufe CEPS unklar
- **Kooperation** mit Stakeholdern (z.B. Unternehmen, öffentliche Verwaltung) ausbaufähig

Empfehlungen für GEODE

- **Interdisziplinäre** und **vergleichende** Forschung ausbauen
- **Einheit** konsolidieren (zwei von vier Einheiten müssen an Profil gewinnen)
- **Zusammenarbeit** mit der Uni Luxemburg stärken

Empfehlungen für CEPS

- Neue **Forschungsstrategie** entwickeln
- Finanzielle **Planungsinstrumente** erstellen, transparente Verteilung der Grundfinanzierung sicherstellen

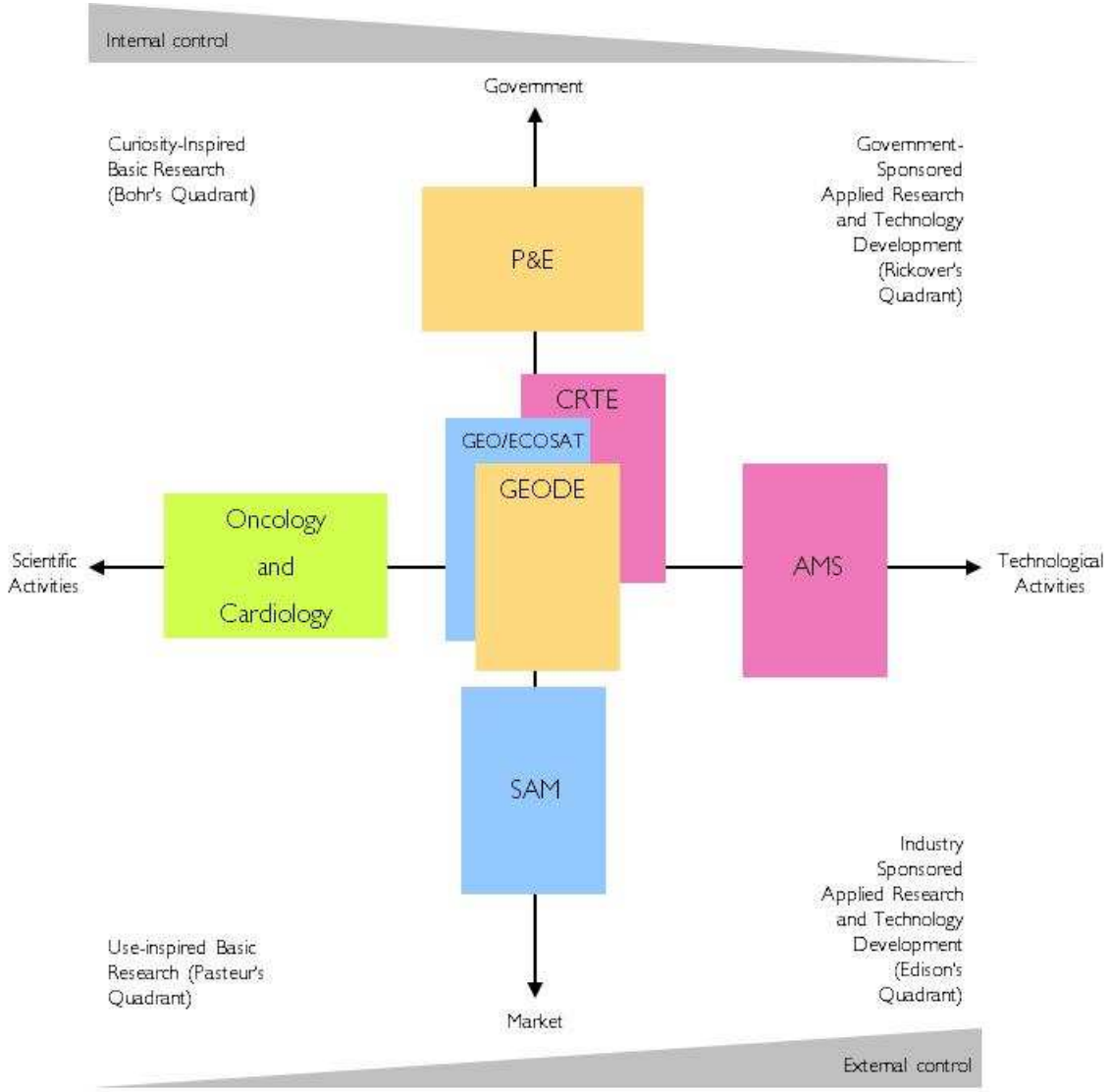
3 Vergleich der Befunde der Evaluation 2010 und 2011

1. Die 2011 bewerteten Einheiten schneiden **besser** ab, insbesondere in Bezug auf:
   - Strategische Ausrichtung und Fokussierung der Forschung
   - Kooperation mit Externen (Wissenschaft und Praxis)
   - Quantität und Qualität des wissenschaftlichen Outputs und der Dienstleistungen

2. Alle acht untersuchten Forschungseinheiten befinden sich in einem **Übergang** von Dienstleistern zu Einrichtungen, die Dienstleistung **und** Forschung betreiben: Die Anreize in den Vereinbarungen zwischen CRP und Ministerium zeigen **Wirkung**. Der Übergang ist teilweise vollzogen.

3. Die Forschungseinheiten liegen meist auf der **Schnittstelle** zwischen Wissenschaft und Anwendung *(vgl. nächste Seite)*
   - Dies ist per se eine grosse **Herausforderung** (Schnittstellen, Personalrekrutierung, Organisation)
   - Die Position ist aber auch eine grosse **Chance**: Interdisziplinäres Wissen kann einen hohen volkswirtschaftlichen Nutzen erzielen

3 Position der Forschungseinrichtungen



4 Folgerungen aus der Positionierung der Forschungseinrichtungen

1. Die Positionierung im Quadranten sind **nicht wertend**:

   - Reine Grundlagenforschung (Bohr's Quadrant) ist normativ **nicht höher** zu bewerten als reine Ressortforschung (Rickover's Quadrant)

2. Entscheidend ist, dass die Position im Quadranten:

   - **bewusst** gewählt wird,
   - mit einer **klaren Strategie** (Schwerpunkten bei Forschung und Dienstleistungen) unterlegt ist und
   - sich in die Strategie der **gesamten Einheit** einfügt.

3. Diese drei Bedingungen sind **nicht in allen Forschungseinheiten** gegeben und sollten im Rahmen der Strategieentwicklung geprüft werden.

INTERFACE

Report on the evaluation of GEOSAT and ECOSAT at the Environment and Agro-Biotechnologies (EVA) Department, CRP Gabriel Lippmann

Based on a peer review by order of the Ministry of Higher Education and Research of Luxembourg

7 December 2011

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1 INTRODUCTION

The Ministry of Higher Education and Research (MESR) of Luxembourg mandated Interface Policy studies Research Consulting, Switzerland, to organise and lead the evaluation of four research units, including *Geohydrosystems and land-use management* (GEOSAT) and *Aquatic and terrestrial ecosystems* (ECOSAT) at the Environment and Agro-Biotechnologies Department (EVA) of the *Centre de Recherche Public Gabriel Lippmann* (CRP-GL). In this report GEOSAT and ECOSAT will be referred to together as the "evaluation unit".

The observations and recommendations presented in this report are based on a peer review by the following four experts working in the evaluation unit's research fields:

- Ueli Bundi, Ing. dipl. EPF, formerly at the Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland
- Prof. Dr. Mark Huijbregts, Department of Environmental Science, Faculty of Science, Radboud University Nijmegen, Netherlands
- Prof. Dr. Otto Nowak, RESOURCES – Institute for Water, Energy and Sustainability, Joanneum Research, Austria
- Dr. Anne Schulte-Wülwer-Leidig, International Commission for the Protection of the Rhine (IKSR - CIPR - ICPR), Germany

Additionally, Dr. Stefan Rieder and Mirjam Inauen of Interface contributed to the peer review by bringing in their expertise in the evaluation of strategies and organisational structures.

The peer review consisted of the reading of a self-assessment report written by GEOSAT and ECOSAT and a hearing at the evaluation unit. The hearing was composed of a presentation, a group discussion of the self-assessment report and several individual interviews with the heads of CRP-GL, GEOSAT and ECOSAT and with researchers working in different sections and at different levels at GEOSAT and ECOSAT.

This report is structured in two parts: The first part discusses the expert team's observations from the evaluation process. This part will follow the structure of the self-assessment report. The second part presents the expert team's most important recommendations to further develop existing strengths and overcome observed weaknesses; it aims to increase the learning effect of this evaluation.

2 RESULTS OF THE EVALUATION

2.1 INPUT

Activities and objectives

Both GEOSAT and ECOSAT are confronted with the challenge to comply with two distinct requirements: For one, they conduct applied research to provide practical solutions in response to the demands of Luxembourg public administrations and other local stakeholders, and services are also provided to international stakeholders (e.g. foreign water agencies). For another, over the past years GEOSAT and ECOSAT have developed their own scientific agenda oriented towards cutting-edge international research. According to the leaders of the two units, scientific questions are nevertheless defined for the purpose of supporting the understanding and solving of important problems. The evaluation unit is challenged by its ambition to perform high quality research and at the same time to provide useful results to policy makers and other stakeholders. The expert team acknowledges the difficulties related to this balancing act, but it also sees the evaluation unit's twofold orientation as one of its main strengths. Furthermore, GEOSAT and ECOSAT have developed a clear vision and concrete objectives that correspond well with the directions given in CRP-GL's performance contract with the MESR.

The expert team is convinced that GEOSAT and ECOSAT have selected the research topics that they are currently working on wisely. The experts consider as especially relevant the units' research on the hydrological cycle on different scales, the various types of bio-indicators and the subject of water flux and element flux in catchments. Their research on diatoms has special relevance in the context of the European Union (EU) Water Framework Directive (WFD). However, it is the opinion of the expert team that the scientific focus on prognostic research could be further developed. Insights on bio-indicators could be used even more extensively to better understand the functioning of aquatic ecosystems.

The expert team has the impression that the evaluation unit invests considerable financial and human resources in the gathering of data (e.g. for the hydro-climatology atlas of Luxembourg or climate variables). The regular updating of the corresponding databases consumes a significant amount of financial and human resources as well. However, the experts question the extent to which the scientific benefits of these databases justify the relatively high investments.

Organisation

The expert team judges that the EVA Department is well organised, with its activities meaningfully separated into units and platforms. The experts consider the organisation – comprising several research units, each conducted by a unit head and several project leaders – to be very efficient. Also, the size of the research teams is adequate to deal with the core topics.

During the hearing, the experts learnt that a new organisation of the whole EVA Department will be implemented by the end of the current year. The new organisational

diagram presented to the expert team is found to be well thought out and adequate. With the new organisation it should be possible to react adequately to relevant questions arising in environmental management and science. At the same time, it should allow the administrative burden of the unit heads to be reduced.

Human resources

The experts were impressed by the motivation, dedication and the competency of the people working at GEOSAT and ECOSAT. The working atmosphere in the evaluation unit appears to be very positive. The supervision of PhD students is also satisfactory, as unit leaders are easily accessible to PhD students.

The two leaders of the units GEOSAT and ECOSAT seem to have a heavy work load, which includes not only the heading of research projects but also the management of financial and human resources. In the new organisation the more administrative part of these tasks might therefore be executed in a different way, i.e. by suitable delegation.

Financial resources

The experts are of the opinion that continuity, quality and independence of research are principles that should be respected by the financing scheme of institutions such as GEOSAT and ECOSAT. Currently, the evaluation unit's block grant, guaranteed by the MESR, represents around sixty per cent of the unit's overall budget. Also, the financing is guaranteed for the period of the performance contract, which runs for three years. In the experts' view, this current relation between block grant and third-party means and also the three-year financing scheme are appropriate and should be maintained as they are.

Moreover, the experts are of the opinion that the current proportion of the investment in permanent salaries in relation to the total budget, namely, around sixty per cent, should be kept at this level and should in no case be increased, so as to maintain flexibility in hiring new scientific expertise.

GEOSAT and ECOSAT are engaged in different consortia with which they have participated in submitting tenders to the European Framework Programmes. In the last three years, however, they have not been very successful at obtaining European funds. The expert team acknowledges the evaluation unit's efforts in this respect and is of the opinion that the activities to obtain such funds should continue.

Infrastructure

GEOSAT and ECOSAT have excellent, high-standard laboratory equipment and sufficient space at their disposal. The use of the laboratories is efficiently organised and, correspondingly, the occupancy rate of the equipment is good. Furthermore, the laboratories are used to carry out research on the equipment itself, and respective results are published in some cases, which is laudable.

2.2 PROCESSES

External communication and cooperation

International cooperation and the visibility of GEOSAT and ECOSAT are growing steadily. The expert team considers that the number and quality of collaboration projects with foreign universities is good. Also, the manifold contacts with scientific partners, the publication activities and the planned participation in FP7 projects will further contribute to the reputation of the evaluation unit within the international research community.

Within the national context, there are two major potential partners for collaboration: the University of Luxembourg and the Resource Centre for Environmental Technologies (CRTE) at the *Centre de Recherche Public Henri Tudor* (CRP-HT).

Currently, the unit's cooperation projects with the University of Luxembourg are almost negligible. However, the expert team is of the opinion that cooperation potential exists in both institutions. In the experts' view, GEOSAT and ECOSAT should aim at strengthening their relationship with the University of Luxembourg to foster scientific exchange and to facilitate the recruitment of PhD students, e.g. by establishing common (special) professorships or by setting up a common Master's programme in environmental sciences.

The expert team observed disturbing overlaps in the research topics, activities and target groups of the evaluation unit and the CRTE unit at the *Centre de Recherche Public Henri Tudor* (CRP-HT), especially in the area of the environmental assessment of ground and surface water pollution. In addition to this, a lack of communication and cooperation have led in the past to unnecessary confusion, e.g. when both GEOSAT/ECOSAT and CRTE tried to collect the same data from the same target groups. It seems that these problems had their origin in general mistrust between the two units. The reasons for this have remained unclear to the experts, however.

Further, the CRTE has a much less developed laboratory infrastructure but does not profit from the GEOSAT/ECOSAT infrastructure; collaboration between the two groups has been very loose. A lack of trust between these institutions appears to have prevented them from sharing common infrastructure in the past.

In the expert team's view, the improvement of communication and cooperation needs to be addressed in the institutions' future strategies with respect to research goals, target groups and respective laboratory equipment. GEOSAT/ECOSAT and CRTE should aim at generating strong synergies among between them in the future. In the experts' view, the current situation is highly unsatisfactory and calls for action within the units (CRTE, GEOSAT and ECOSAT) and within their mother institutions (CRP-HT and CRP-GL).

Internal communication and cooperation

The expert team has the impression that internal communication, both top-down and bottom-up, works very well. For example, GEOSAT's and ECOSAT's future strategies

were developed in a participatory process, including the leaders of its units and the project leaders and keeping all interested collaborators informed.

GEOSAT and ECOSAT have worked rather separately in recent years, which, however, has not had a negative impact on their disciplinary scientific success. They have now established two common research programmes ('Impact of global change on the water cycle' and 'Environmental and health risks of emerging hazards'), which should also foster the collaboration between the two units. The experts recognise these efforts and encourage GEOSAT and ECOSAT to continue fostering interdisciplinary cooperation (see Recommendation 4).

Quality assurance

To contribute to the quality assurance of their output, the evaluation unit undertakes ring tests in the field of water chemistry, for example, or comparative studies on diatom determination, which is a way of proceeding that the experts consider appropriate.

2.3 OUTPUT

The expert team recognizes that both GEOSAT and ECOSAT have produced a remarkably good scientific output in the form of publications. Also, the evaluation unit's strategy to further enhance its international visibility via high-level publications is convincing.

Considering GEOSAT's and ECOSAT's scientific orientation, their output in the form of service activities is less prominent than their scientific output. Nevertheless, the experts think that the quantity and quality of services are good and appropriate.

2.4 LONG-TERM EFFECTS AND RELEVANCE

GEOSAT's and ECOSAT's research projects and the results that they produce are of high interest for the international research community. Especially their insights on the hydrological cycle and on diatoms are relevant. Their work on water quality (surface water and groundwater) is especially needed for the implementation of the EU Water Framework Directive (WFD) and the Flood Directive (FD) in Luxembourg. The results of the Rheinblick2050 project, assessing climate change impacts on discharge in the Rhine River basin, will play an important role in political decision-making at the international level. The evaluation unit's activities are relevant in the long term for the monitoring of water quality, for the forecast of floods and for understanding water cycles and small catchment areas.

The evaluation unit has also focused some of its research activities on issues in microbiology. However, the results produced do not seem to be as prominent yet as the results in the other areas of activity. The experts advise the unit to further strengthen research on distribution and transport of pathogens. By doing so, the use of means might be optimized in terms of scientific output and practical usefulness.

2.5 REFLECTIONS AND STRATEGY FOR THE FUTURE

The expert team is convinced that both GEOSAT and ECOSAT have developed a reasonable and sustainable future strategy, have made a convincing selection of research topics and have planned a new organisational structure that fits these new challenges.

In the future, the evaluation unit intends to foster interdisciplinary projects, which is a goal that is well reflected within the new organisation of the department. The experts acknowledge the newly established two interdisciplinary research programmes (see 2.2) as a first promising step towards interdisciplinarity. However, within the unit's vision of interdisciplinarity, social and economic dimensions are poorly considered. In the experts' view, more emphasis should be put on integrated water resources management, including social and economic issues. Socio-economic competences should be added through collaboration with external research groups, and possibly be supplemented with limited socio-economic competences within the unit (in the sense of a socio-economic bridge pillar). Since building up socio-economic competences is a most difficult task, the expert team suggests relying on analogue efforts of comparable research institutions.

3 SUMMARY AND RECOMMENDATIONS

3.1 SUMMARY

The two evaluated units, GEOSAT and ECOSAT, have selected their research topics wisely and developed a clear scientific vision. Also, their concrete objectives correspond well with the directions given in the performance contract of the *Centre de Recherche Public Gabriel Lippmann* (CRP-GL) with the Ministry of Higher Education and Research (MESR). The unit's financing scheme, including the relation between block grant and third-party means and the three-year financing guaranteed by the MESR, is appropriate. In the future, however, funds from European Framework Programmes should be increased.

The Environment and Agro-Biotechnologies Department (EVA), which comprises the two units GEOSAT and ECOSAT, is organised very well. Also, the new organisation, which is planned to be implemented soon, is well thought out and fits the units' objectives. With respect to human resources, the experts were impressed by the motivation, dedication and competency of GEOSAT and ECOSAT teams. However, the work load of the units' leaders seems very high. Further internal cooperation between GEOSAT and ECOSAT should now be improved by the implementation of two planned common research programmes.

GEOSAT's and ECOSAT's scientific output in the form of publications is remarkably good, and the strategy to further enhance its international visibility is convincing. Also, the two units have the potential to play an important role in political decision-making at the international level. However, the relatively high investment in data gathering represents a critical point, as the scientific benefits from certain collected data remained unclear to the experts. The evaluated units now intend to foster interdisciplinary projects. In their vision of interdisciplinarity, social and economic dimensions should still be further developed. Also, the collaboration potential with the University of Luxembourg and the CRTE unit at the *Centre de Recherche Public Henri Tudor* (CRP-HT) is clearly underexploited. Especially the relationship with CRTE is characterised by disturbing overlaps and a lack of trust, communication and cooperation.

3.2 RECOMMENDATIONS

Based on the observations stated above, the expert team formulates the following recommendations.

Recommendation 1: Evaluate the investments in the observatories, i.e. data acquisition and database maintenance

A lot of resources are invested in the set-up and maintenance of observatories and data collection, e.g. for the hydro-climatology atlas of Luxembourg. The experts are not in all cases convinced that the scientific benefits of these databases justify the relatively high investments. Data gathering should always be closely connected to the evaluation unit's research focus, and the resources invested should correspond to the respective

research questions. Since the experts are unsure whether or not all collected data will be of scientific relevance in the future, they are of the opinion that the evaluation unit should continuously evaluate if these investments are still in line with the evaluation unit's research strategy. By integrating the existing observatories, the department has now created a platform aimed at gathering and managing all relevant data. The experts consider this a good step to reduce the work load of the units' researchers. They find it important that the platform's activities are always closely connected to the scientific work of the research units. Furthermore, routine monitoring should be fully financed by the institutions commissioning and using the data (e.g. public administrations).

Recommendation 2: Evaluate the investments in research on diatoms

The evaluation unit is putting emphasis on diatom research, resulting without doubt in an internationally leading position in this field. Considering the context of international research and policy on environmental issues, the experts are nevertheless unsure of the future relevance of this research topic. Thus, even investments in projects that fit the unit's overall research agenda and that produced important results in the past should be regularly evaluated in view of the unit's evolving scientific priorities.

Recommendation 3: Implement the new organisational structure

By the end of the current year, the EVA Department will implement a new organisational structure, which will, of course, also affect the evaluation unit. The new organisational diagram presented to the expert team during the hearing was convincing. The experts would like to stress that with the new organisation, the prerequisites should be created for reacting adequately to relevant questions arising in environmental management and science. This includes the need to foster interdisciplinary projects as well as stronger cooperation between GEOSAT and ECOSAT. The new organisation should also allow reducing the unit heads' administrative burden to be reduced.

Recommendation 4: Invest in interdisciplinary projects

GEOSAT's and ECOSAT's general plans to foster interdisciplinary projects are fully supported by the expert team. The experts are of the opinion, however, that the unit's vision of interdisciplinarity should include social and economic issues more clearly and allow for research on integrated water resources management. The unit's ambitions with respect to interdisciplinarity should be concretized in its research agenda with clearly formulated research questions, projects and programmes. A first step has now been taken by establishing two interdisciplinary programmes ('Impact of global change on the water cycle' and 'Environmental and health risks of emerging hazards'). In addition to this, directives on promoting and incentives for supporting interdisciplinary and transdisciplinary research should be established.

Recommendation 5: Collaborate with CRTE at CRP-HT

The expert team observed disturbing overlaps in the research topics and activities, and the target groups of GEOSAT/ECOSAT and CRTE, especially in the area of the environmental assessment of (ground) water pollution. On the other hand, the experts cannot comprehend why the excellent laboratory infrastructure of GEOSAT/ECOSAT is not made available to, respectively not being used by, CRTE. The expert team is of the opinion that these issues need to be addressed in the institutions' future strategies. They should thereby aim at making best use of the joint resources, at improving com-

munication and cooperation and hence at generating strong synergies among the evaluation units in the future.

To avoid disturbing overlaps and to foster productive interactions, both institutions should, first, focus on their core competences[1] and, second, make active use of their complementary strengths in the framework of joint research and consulting activities.

The experts think that integrated water management may offer great potential for synergies between GEOSAT/ECOSAT, CRTE and the University of Luxembourg. The expert team therefore recommends setting up a common research project that combines the units' complementary strengths and contributes to sustainable water management in Luxembourg. For instance, a project of the type "Luxembourg Groundwater 2025" or a project on urban water cycles could be a starting point. A common project of this kind should be the starting point for dispelling the existing mistrust between the units and for recognising potential synergies. Furthermore, it should facilitate the joint use of laboratory equipment and lead to a revision of existing overlaps and duplications. Communication between CRTE and GEOSAT/ECOSAT should be improved at all hierarchical levels. There should be regular exchange not only between the directors of CRP-GL and CRP-HT but also between the project leaders, project managers and researchers at the two evaluation units.

Recommendation 6: Collaborate with the University of Luxembourg

The expert team considers that the number and quality of collaboration projects with foreign universities is good. However, the evaluation unit's cooperation with the University of Luxembourg is underdeveloped. In the experts' view, GEOSAT and ECOSAT should aim to strengthen their relationship with the University of Luxembourg not only to foster scientific exchange but also to facilitate the recruitment of PhD students. Collaboration could be intensified by setting up a common Master's programme in environmental sciences (by inclusion of a further university partner) or by creating adjunct and/or joint professorships at the university. In the short run, the establishment of a common graduate school could represent a first promising step. The expert team emphasises that the managements of CRP-GL, CRP-HT and the University of Luxembourg should substantiate cooperation options. Since cooperation initiatives might be questioned in terms of legality, the managements should seek support from the MESR in creating flexible conditions for innovative cooperation modes among their institutions. Already existing efforts by GEOSAT and ECOSAT to establish a closer relationship with the University of Luxembourg should be clearly supported by the management of CRP-GL and by the MESR.

[1] For CRTE: Life Cycle Assessment of products and processes; process engineering and modelling, applied to wastewater treatment and (renewable) energy systems; integrated mass balancing and modelling of pollutants in environmental compartments (water, air). For GEOSAT/ECOSAT: investigation of biological, chemical and physical processes that take place in geo-hydrosystems and ecosystems, in particular the processes controlling the quantitative (hydro-climatology), qualitative (hydro-geochemistry, environmental microbiology, bio-indication) and biological (ecology and eco-toxicology) spatio-temporal dynamics of surface and groundwater resources.

Recommendation 7: Maintain the current financing scheme

To assure continuity, quality and independence of research, the current share of the block grant, guaranteed by the MESR for a period of three years and amounting to sixty per cent of CRP-GL's overall budget, should be maintained. Moreover, the current proportion of the investment in permanent salaries in relation to the total budget, namely, around sixty per cent, should be kept at this level and in no case be increased so as to maintain flexibility in hiring new scientific expertise.

COMPANY INFORMATION

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PROJECT REFERENCE

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Project number: P11-10

PRISE DE POSITION DU CONSEIL D'ADMINISTRATION DU CRP – GABRIEL LIPPMANN

Par rapport au

Report on the evaluation of GEOSAT and ECOSAT at the Environment and Agro-biotechnologies (EVA) Department, CRP Gabriel Lippmann
Based on a peer review by order of the Ministry of Higher Education and Research of Luxembourg

Établi par la société Interface

Lors d'une réunion qui s'est tenue le 10 avril 2012, le conseil d'administration du CRP – Gabriel Lippmann a eu un échange de vues sur le rapport d'évaluation des unités de recherche GEOSAT et ECOSAT du département "Environnement et Agro-biotechnologies" (EVA) commandité par le MESR dans le cadre de la convention pluriannuelle 2008-2010.

A titre liminaire, le conseil d'administration réitère son adhésion au principe d'une évaluation externe et indépendante des activités du centre, telle que définie à l'article 9 de la convention pluriannuelle 2011-2013 conclue avec le Gouvernement. Le conseil d'administration est d'avis qu'un tel processus est indispensable pour l'aider à déterminer, de manière objective, le niveau atteint par les différentes équipes scientifiques du centre et leur participation dans la réalisation des objectifs généraux définis dans la convention pluriannuelle. En outre, les recommandations émises par des experts indépendants sont utiles pour dégager des pistes visant à faire progresser les équipes scientifiques au niveau scientifique et organisationnel.

En ce qui concerne l'évaluation 2011 du volet 'environnement' du Département EVA, le conseil d'administration a particulièrement apprécié que le MESR a largement tenu compte des réflexions menées par le conseil d'administration suite à l'évaluation 2010 du Département SAM.

Cela concerne dans un premier temps la méthodologie du processus d'évaluation lui-même qui, (1) grâce à un canevas retravaillé donne une image plus fidèle des activités de recherche des unités évaluées et qui, (2) grâce à une interaction améliorée entre les évaluateurs et le centre le long du processus d'évaluation a permis d'aboutir à un rapport d'évaluation final sans erreurs factuelles.

Dans un deuxième temps, le conseil note favorablement que les évaluateurs étaient mieux informés dès le départ des objectifs généraux à atteindre par le centre, notamment en ce qui concerne le double référentiel (activités de recherche académique vs. activités de recherche '*service driven*'). A ce sujet, le conseil d'administration est particulièrement satisfait de lire que les évaluateurs souscrivent à cette stratégie de recherche orientée du Département EVA et qu'ils la considèrent même comme '*one of its main strengths*'. A ce niveau le conseil d'administration ne peut que soutenir la recommandation (recommandation 7) des évaluateurs, défendue depuis toujours par le conseil d'administration, que la contribution financière du MESR au budget du centre ne devrait pas descendre en-dessous de 60%, afin de garantir la continuité, la qualité et l'indépendance de ses activités de recherche.

En ce qui concerne les autres recommandations au niveau interne des évaluateurs, le conseil d'administration relève que les recommandations (recommandations 1-4) ont été mises en œuvre dans le cadre du plan pluriannuel 2011-2013, notamment en ce qui concerne l'évaluation de l'investissement dans certains domaines de recherche, l'implémentation de la restructuration du Département EVA et l'importance des projets interdisciplinaires.

En ce qui concerne les recommandations (recommandations 5 et 6) ayant trait à la collaboration avec les autres institutions de recherche luxembourgeoises, le conseil d'administration note que des discussions sont actuellement en cours dans le cadre de la nouvelle loi ayant pour objet l'organisation des Centres de Recherche Publics, afin d'arriver à une meilleure coordination des domaines d'activités, notamment en ce qui concerne le CRP – Gabriel Lippmann et le CRP – Henri Tudor. En ce qui concerne la collaboration avec l'Université du Luxembourg, le conseil d'administration ne peut que souscrire aux recommandations des évaluateurs quant à une interaction plus forte avec l'Université, notamment en ce qui concerne les formations de type *Master* et les écoles doctorales. A ce niveau, le conseil ne peut qu'inciter le MESR à développer le cadre nécessaire pour faciliter et améliorer cette collaboration.

INTERFACE

Report on the evaluation of CRTE, CRP Henri Tudor

Based on a peer review by order of the Ministry of Higher Education and Research of Luxembourg

16 December 2011

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1 INTRODUCTION

The Ministry of Higher Education and Research (MESR) of Luxembourg mandated Interface Policy studies Research Consulting, Switzerland, to organise and lead the evaluation of four research units, one of them the Resource Centre for Environmental Technologies (CRTE) at the *Centre de Recherche Public Henri Tudor* (CRP-HT). In this report CRTE will be referred to as the "evaluation unit".

The observations and recommendations presented in this report are based on a peer review by the following four experts working in the evaluation unit's research fields:

- Ueli Bundi, Ing. dipl. EPF, formerly at the Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland
- Prof. Dr. Mark Huijbregts, Department of Environmental Science, Faculty of Science, Radboud University Nijmegen, Netherlands
- Prof. Dr. Otto Nowak, RESOURCES – Institute for Water, Energy and Sustainability, Joanneum Research, Austria
- Dr. Anne Schulte-Wülwer-Leidig, International Commission for the Protection of the Rhine (IKSR - CIPR - ICPR), Germany

Additionally, Dr. Stefan Rieder and Mirjam Inauen of Interface contributed to the peer review by bringing in their expertise in the evaluation of strategies and organisational structures.

The peer review consisted of the reading of a self-assessment report written by CRTE and a hearing at the evaluation unit. The hearing was composed of a presentation, a group discussion of the self-assessment report and several individual interviews with the managing director of CRP-HT and with researchers working in different sections and at different levels at CRTE.

The present report is structured in two parts: The first part discusses the expert team's observations from the evaluation process. This part will follow the structure of the self-assessment report. The second part presents the expert team's most important recommendations to further develop existing strengths and overcome observed weaknesses; it aims to increase the learning effect of this evaluation.

2 RESULTS OF THE EVALUATION

2.1 INPUT

Activities and objectives

CRTE defines its role as an interface between science/technology and society. As such, CRTE carries out research but also provides policy support, mainly to Luxembourg public administrations. CRTE has managed well to provide solutions to administrations and other stakeholders by connecting practical problems to research questions. Consequently, the expert team considers CRTE's particular position as an interface between research and practice to be one of its main strengths. Another remarkable strength is the holistic approach to environmental issues practised by CRTE.

CRTE needs to comply with the requests of three different ministries in Luxembourg and of many other stakeholders. As a consequence, the unit's research agenda includes a broad range of diverse projects and lacks a clear direction. CRTE's research activities include Life Cycle Assessment (LCA), energy technologies and water pollution and wastewater treatment. Although these are interesting research areas, it is not obvious how these are connected in the current setting of CRTE.

Organisation

The expert team had great difficulties understanding the organisational structure of CRTE, as the diagram provided in the self-assessment report was a poor representation of the actual situation. Although the organisation of CRTE became clearer during the hearing, the expert team still considers that it is too complicated and too difficult to comprehend. The experts suppose that the complex organisation leads to additional administrative workload, hence unnecessarily binding human resources, and also that it hampers the integration of new collaborators. They also assume that CRTE's difficulties to present a comprehensible organisational diagram are related to the lack of clear key topics and objectives in the unit's strategy.

Human resources

During the hearing at CRTE, the expert team met highly motivated people who are very dedicated to their research projects. Based on their impressions during the interviews with the R&D managers, the experts acknowledge that these are competent researchers.

However, the experts find that there is room for improvement with respect to the supervision of PhD students and junior researchers. Even if more experienced researchers are easily accessible, it appears that PhD students and junior researchers have to take an active initiative to discuss their research questions. This can be set up in a more structured and direct way for the whole of CRTE.

Also, CRTE's project managers seem to be rather dependent on R&D managers with respect to the definition and the management of their research projects. The experts are therefore of the opinion that the project managers' management skills and thus their leadership should be strengthened.

CRTE has developed activities to further increase the number of collaborators holding a PhD degree. The experts support this effort.

Financial resources

The experts are of the opinion that continuity, quality and independence of research are principles that should be respected by the financing scheme of an institution like CRTE. Currently, the evaluation unit's block grant, guaranteed by the MESR, represents around fifty per cent of the unit's overall budget.[1] Also, the financing is guaranteed for the period of the performance contract, which runs for three years. In the experts' view, this current relation between block grant and third-party means and also the three-year financing scheme are appropriate and should be maintained as they are.

Moreover, they are of the opinion that the current proportion of the investments in salaries in relation to the total budget, namely, around sixty per cent, should be kept at this level and should in no case be increased, to maintain flexibility in tackling emerging problems and in hiring new scientific expertise.

In the period under evaluation, CRTE has obtained only little funding from European Framework Programmes. The expert team is of the opinion that efforts should be undertaken to increase these funds.

Infrastructure

The experts consider CRTE's current laboratory equipment insufficient, as it does not allow the necessary investigations to be conducted to answer the unit's research questions. However, through the contacts of its collaborators, the CRTE team has access to well-equipped external laboratories, such as the high-quality analytical laboratory of the Luxembourg water agency as well as the University of Trier.

Attention has to be paid to the circumstance that the two units GEOSAT and ECOSAT at the *Centre de Recherche Public Gabriel Lippman* (CRP-GL) have excellent laboratory equipment suitable for CRTE's research fields. CRTE's collaboration with GEOSAT and ECOSAT has been very underdeveloped, however. A lack of trust between these institutions appears to prevent them from sharing common infrastructure (see also external communication and cooperation below).

2.2 PROCESSES

External communication and cooperation

CRTE is well known in the wastewater treatment community, and the unit has managed to collaborate with recognized scientific partners. In the field of life cycle assessment the unit is also gaining increasing recognition within the international research community.

[1] The block grant represented 49 percent in 2008, 44 per cent in 2009 and 45 per cent in 2010 of the unit's overall budget (source: self-assessment report). In the same period, the share of the block grant in the overall budget of CRP-HT as a whole was around 60 per cent.

At a national level, there are two major potential partners for collaboration: the University of Luxembourg and GEOSAT/ECOSAT at CRP-GL.

CRTE has been active in trying to establish a closer relationship with the University of Luxembourg, but the existing cooperation is still not optimal. However, the expert team is of the opinion that cooperation potential exists in both institutions. In the experts' view, CRTE should aim at strengthening its relationship with the University of Luxembourg to foster scientific exchange and to facilitate the recruitment of PhD students, e.g. by establishing common (special) professorships or by setting up a common Master's programme in environmental sciences.

The expert team observed disturbing overlaps with respect to research activities and target groups of the evaluation unit and GEOSAT/ECOSAT, especially in the area of the environmental assessment of (ground) water pollution. In addition to this, a lack of communication and cooperation have led in the past to unnecessary confusion, e.g. when both GEOSAT/ECOSAT and CRTE tried to collect the same data from the same target groups. It seems that these problems had their origin in general mistrust between the two units. The reasons for this have remained unclear to the experts, however.

In the expert team's view, the improvement of communication and cooperation needs to be addressed in the institutions' future strategies with respect to research goals, target groups and respective laboratory equipment. ECOSAT/GEOSAT and CRTE should aim at generating strong synergies between them in the future. In the experts' view, the current situation is highly unsatisfactory and calls for action within the units (CRTE, GEOSAT and ECOSAT) and within their mother institutions (CRP-HT and CRP-GL).

Internal communication and cooperation

The whole CRTE team now meets every two weeks for internal exchange. Moreover, CRTE elaborated a strategy paper on internal communication and appointed a person to be responsible for internal communication. Despite these formal instruments to foster communication within the unit, the experts observed some shortcomings in this regard. For instance, it was not clear how junior researchers are involved in the development of new ideas and the overall research strategy. The experts recommend that unit managers should take active steps to improve the participation of all collaborators and reinforce bottom-up communication.

CRP-HT has set up corporate innovation programmes (CIPs) that are aimed at fostering internal cooperation projects. The expert team acknowledges the efforts to bring together the different departments for common research projects. However, the invested human resources and administrative efforts are rather high, and the impact of the programmes is still unclear.

Quality assurance

CRP-HT elaborated a formal quality assurance system. However, the experts think that the relation between the time invested and the effect of the system on the quality of the unit's output should be re-examined.

2.3 OUTPUT

In the period of the last performance contract, namely, from 2008 to 2010, the number of scientific publications and, respectively, the visibility and international recognition of CRTE were low. However, the unit is well aware of this undesired situation and is starting to become more productive in terms of scientific publications. In 2011, the number of submitted and accepted publications in scientific journals sharply increased, which reflects a first improvement of the situation. As output from CRTE contributing to supporting environmental policy, a considerable number of reports, guidelines, position papers and press articles were published during the last three years. With its activities CRTE supports the development and successful implementation of national and European environmental policies (e.g. REACH & IPPC Help Desk; EU Water Framework Directive, EU Drinking Water Directive, etc.). Some of these products are also distributed at the international level (for example, Guideline: *Leitfaden zum Umgang mit Regenwasser in Siedlungsgebieten (LURS) Luxemburgs,* Leaflet: REACH Helpdesk Newsletter). For several of the criteria mentioned, however, the results of the customer and partner satisfaction survey reveal a certain potential for improvement. Still, the expert team acknowledges the quality and political relevance of CRTE's services.

2.4 LONG-TERM EFFECTS AND RELEVANCE

The expert team considers that, particularly within Luxembourg, CRTE's service activities are respected. Judging by the elevated number of contract projects and the long duration of customer relationships, the unit's services also seem to be well-established. Consequently, CRTE's main customers, namely, Luxembourg public administrations, rely on the unit's research results and policy advice (although based on the results of the customer and partner satisfaction survey, there are possibilities for improvement, as mentioned in 2.3 above).

2.5 REFLECTIONS AND STRATEGY FOR THE FUTURE

CRTE's strategy as presented in the self-assessment report is poorly elaborated and limited primarily to some functional principles. Furthermore, information on planned activities and investments and an explanation of how the unit will implement its strategy and achieve its goals are missing. Generally speaking, the unit's selection of research topics is still highly demand driven. The lack of proactive initiative to define research questions has prevented the unit from concentrating its activities and increasing its performance in its core fields of research.

However, for the field of life cycle assessment, CRTE presented a promising strategy at the hearing. In the experts' view, the unit's activities at the intersection of life cycle assessment and technology offer great opportunities for interesting and relevant research results. In the last few years already, the unit's activities in the field have progressed well, and planned activities in the future are appropriate. It most certainly makes sense for CRTE to further invest in research on the intersection of life cycle assessment and technology, and hence to support the steering of technology development in a truly environmentally friendly direction.

Looking at wastewater treatment, CRTE's projects and planned activities represent state of the art research, in particular concerning the degradation of micro pollutants.

CRTE's projects related to the EU Water Framework Directive (WFD) are of high relevance, too. The unit's LIFE+ project M3 reflects an important development, also in the context of the WFD. Consequently, relevant results can be expected from the unit's research in this regard.

On the other hand, the unit's activities in environmental risk assessment of surface water and groundwater appear to be highly demand driven, and a clear strategy for future activities is missing. Neither the report nor the hearing allowed the expert team to ascertain in which direction CRTE is planning to go in this field of research.

Also, the unit lacks a real strategy with respect to the energy field. It is not clear how energy topics are integrated in the research strategy of the whole department (e.g. photovoltaics). In the experts' opinion, energy aspects should be better integrated in the unit's overall strategy for the future. For instance, CRTE's work on energy aspects of wastewater treatment and of the urban water cycle in general offers promising approaches that should be further developed.

3 SUMMARY AND RECOMMENDATIONS

3.1 SUMMARY

The experts' overall assessment of CRTE is positive: In the period under evaluation, the unit has developed well and has managed to establish itself as an interface between research and practice – a position that represents one of the unit's most important strengths. The unit's further strengths can be described as follows:

CRTE provides high quality services that are well appreciated by its customers; the unit has great potential to develop relevant research results especially in the domains of life cycle assessment and waste water treatment; the unit's collaborators are highly motivated and competent, and the financial basis is good.

Despite these positive results, there is room for improvement especially in the following areas:

Given the unit's diverse scientific projects, its research agenda still lacks a clear direction. Also, a lack of proactive initiative to define some key research questions has hindered the unit from concentrating its activities and increasing performance in its core fields of research. CRTE therefore needs to develop a clear strategy that combines the different research topics and connects them to practical problems. This overall strategy should then be reflected in the unit's organisation, which, at the moment, is too complicated and difficult to understand.

Furthermore, the number of scientific publications has been low (even if it is now starting to increase), and finally, the supervision of PhD students and junior researchers as well as the management skills and leadership abilities of project managers could be improved.

Particular attention has to paid to the relationship with GEOSAT and ECOSAT at the *Centre de Recherche Public Gabriel Lippman* (CRP-GL), which is characterised by disturbing overlaps and a lack of trust, communication and cooperation. Also, CRTE's collaboration with the University of Luxembourg is clearly underexploited.

In conclusion, CRTE is a well functioning research and service unit. However, its potential could be further exploited by focusing the strategy and exploiting the opportunities for external collaborations.

3.2 RECOMMENDATIONS

Based on the observations stated above, the expert team formulates the following recommendations.

Recommendation 1: Define CRTE's future strategy

The experts observed that in the past, CRTE has worked on interesting research projects and has provided useful services. However, the research projects are only weakly connected. An overall strategy that combines the different research topics and connects them to practical problems is missing. CRTE has now started to develop such a strategy, defining the unit's future focus. The experts highly recommend continuing these efforts.

Recommendation 2: Simplify the organisation according to the future strategy

The experts consider that the complex organisation of CRTE (and also partly of CRP-HT) leads to a relatively high administrative workload and hence unnecessarily binds human resources, and it also hampers the integration of new collaborators. The organisation should therefore be simplified. A new organisational chart should be easily comprehensible and allow each collaborator to understand his or her position in the organisational structure. Furthermore, the experts assume that CRTE's difficulties to present a comprehensible organisational diagram are related to the lack of clear key topics and objectives in the unit's strategy. A new, simplified organisation should therefore reflect the unit's strategic orientation (see Recommendation 1).

Recommendation 3: Simplify measures to foster internal cooperation

CRP-HT has made efforts to foster internal cooperation projects by setting up corporate innovation programmes (CIPs). However, the experts find the invested resources rather high, and they are in doubt about the efficiency of the CIPs. The experts therefore suggest evaluating continuously whether or not the costs of the corporate innovation programmes are appropriate in view of their effects. Simpler methods to foster internal cooperation might be more efficient. For example, CRP-HT could define common research areas and combine them with financial incentives, e.g. in the form of a fund specifically assigned to finance common projects.

Recommendation 4: Further strengthen CRTE's research base

CRTE's future strategy should be targeted at enhancing the unit's international visibility, by producing more publications in peer reviewed journals, by increasing teaching activities at the University of Luxembourg and at foreign universities and by investing in national and international cooperation projects. In particular, the experts think that efforts should be strengthened to increase participation in European Framework Programmes.

Recommendation 5: Invest in basic laboratory equipment and improve access to external infrastructure

CRTE's current laboratory equipment does not allow the CRTE to conduct the investigations necessary to answer its research questions; it is therefore insufficient. Even though the CRTE team has access to well-equipped external laboratories, the experts consider that it would be worth investing in the basic equipment for wastewater analysis. However, more elaborate and expensive laboratory equipment should not be purchased. Closer collaboration with GEOSAT and ECOSAT at CRP-GL would allow CRTE to gain access to very high-standard research infrastructure (see Recommendation 5) and avoid unnecessary duplications.

Recommendation 6: Collaborate with GEOSAT and ECOSAT at CRP-GL

The expert team observed disturbing overlaps in the research topics and activities and the target groups of CRTE and GEOSAT/ECOSAT, especially in the area of the environmental assessment of (ground) water pollution. On the other hand, the experts cannot comprehend why the excellent laboratory infrastructure of GEOSAT/ECOSAT is not made available to, respectively not being used by, CRTE. The expert team is of the opinion that these issues need to be addressed in the institutions' future strategies. They should thereby aim at making best use of the joint resources, at improving communication and cooperation and hence at generating strong synergies among the evaluation units in the future.

To avoid disturbing overlaps and to foster productive interactions, both institutions should, first, focus on their core competences[1] and, second, make active use of their complementary strengths in the framework of joint research and consulting activities.

The experts think that integrated water management may offer great potential for synergies between CRTE, GEOSAT/ECOSAT and the University of Luxembourg. The expert team therefore recommends setting up a common research project that combines the units' complementary strengths and contributes to sustainable water management in Luxembourg. For instance, a project of the type "Luxembourg Groundwater 2025" or a project on urban water cycles could be a starting point. A common project of this kind should be the starting point for dispelling the existing mistrust between the units and for recognising potential synergies. Furthermore, it should facilitate the joint use of laboratory equipment and lead to a revision of existing overlaps and duplications. Communication between CRTE and GEOSAT/ECOSAT should be improved at all hierarchical levels. There should be regular exchange not only between the directors of CRP-GL and CRP-HT but also between the project leaders, project managers and researchers at the two evaluation units.

Recommendations 7: Collaborate with the University of Luxembourg

The expert team considers that the number and quality of collaboration projects with foreign universities is good. However, the evaluation unit's cooperation with the University of Luxembourg is underdeveloped. In the experts' view, CRTE should aim to strengthen its relationship with the University of Luxembourg not only to foster scientific exchange but also to facilitate the recruitment of PhD students. Collaboration could be intensified by setting up a common Master's programme in environmental sciences (by inclusion of a further university partner) or by creating adjunct and/or joint professorships at the university. In the short run, the establishment of a common graduate school could represent a first promising step. The expert team emphasises that the managements of CRP-HT, CRP-GL and the University of Luxembourg should substantiate cooperation options. Since cooperation initiatives might be questioned in

[1] For CRTE: Life Cycle Assessment of products and processes; process engineering and modelling, applied to wastewater treatment and (renewable) energy systems; integrated mass balancing and modelling of pollutants in environmental compartments (water, air). For GEOSAT/ECOSAT: investigation of biological, chemical and physical processes that take place in geo-hydro systems and ecosystems, in particular the processes controlling the quantitative (hydro-climatology), qualitative (hydro-geochemistry, environmental microbiology, bio-indication) and biological (ecology and eco-toxicology) spatio-temporal dynamics of surface and groundwater resources.

terms of legality, the managements should seek support from the MESR in creating flexible conditions for innovative cooperation modes among their institutions. Already existing efforts by CRTE to establish a closer relationship with the University of Luxembourg should be clearly supported by the management of CRP-HT and by the Ministry.

Recommendation 8: Maintain the current financing scheme

To assure continuity, quality and independence of research, the current share of the block grant, guaranteed by the MESR for a period of three years and amounting to fifty percent of CRTE's overall budget, should be maintained. Moreover, the current proportion of the investment in salaries in relation to the total budget, namely, around sixty per cent, should be kept at this level and in no case be increased so as to maintain flexibility in hiring new scientific expertise.

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Lucerne, 16 December 2011
Project number: P11-10

tudor

PUBLIC RESEARCH CENTRE HENRI TUDOR

Pdf Ministre / CRP-HT - Courplus

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Ministère de l'Enseignement Supérieur et de la Recherche
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A l'attention de Monsieur le Ministre
François Biltgen

Luxembourg, le 15 mars 2012

en rapport avec le No 3/2012
= demande de prise de position

Monsieur le Ministre,

Nous avons bien reçu le rapport d'évaluation de notre département *"Centre de Ressources des Technologies pour l'Environnement"* (CRTE) réalisé courant 2011 par la société Interface dans le cadre de notre contrat de performance 2011-2013.

La prise de position du CRP Henri Tudor quant aux appréciations et aux recommandations formulées dans ce rapport d'évaluation est jointe en annexe.

Sans vouloir répéter ici les différents éléments de notre prise de position, permettez-nous de faire quelques remarques supplémentaires d'ordre plus général.

Nous saluons d'abord cette évaluation qui est un exercice évidemment utile et nécessaire. Les conclusions et recommandations des experts externes, malgré certaines divergences de vue mentionnées dans notre prise de position, sont importantes et nous nous efforcerons à les considérer dans notre démarche d'amélioration continue du CRTE et du Centre en général.

Ensuite, nous souhaitons féliciter le ministère pour les améliorations nettes quant à la méthodologie et la forme de l'évaluation. En effet, suite aux expériences peu satisfaisantes du premier exercice en 2010, nos équipes ont constaté une prise en compte positive des remarques formulées de notre côté.

Alors que nous avons pu contribuer plus fortement que l'année passée à l'identification des experts, nous regrettons pourtant que la composition du panel d'experts n'ait finalement pas été suffisamment équilibrée par rapport aux différents domaines d'activité couverts par le CRTE. Ainsi nous regrettons en particulier que le panel d'experts, composé pour l'essentiel par des spécialistes de la recherche sur l'eau, soit venu à des conclusions assez biaisées et ne restituant pas la réalité quant à la collaboration des deux CRP.

Par contre, nous avons approuvé l'initiative du ministère d'avoir spontanément invité pour la revue contradictoire avec les experts de leur rapport d'évaluation préliminaire, la vice-rectrice en charge de la Recherche de l'Université de Luxembourg pour discuter ensemble du point sur la collaboration avec l'Université. Nous pensons que cette discussion a été très concluante pour toutes les parties.

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Il serait à ce niveau d'ailleurs fortement souhaitable que, pour des raisons de symétrie évidente, les experts en charge de la prochaine évaluation du plan quadriannuel de l'UL, puissent également rencontrer les représentants des CRP pour avoir leurs vues des choses dans le contexte de l'environnement national de la recherche publique.

Dans l'espoir que notre prise de position vous permette de mieux cerner les conclusions et recommandations de cette évaluation et tout en restant à votre disposition pour des renseignements supplémentaires, nous vous prions, Monsieur le Ministre, de recevoir l'expression de nos sentiments très distingués.

Georges Bourscheid
Président du Conseil d'administration

Marc Lemmer
Directeur Général

Annexe : Prise de position du CRP Henri Tudor « Tudor response to the report on the évaluation of CRTE / CRP Henri Tudor »

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Tudor response to the report on the evaluation of CRTE / CRP Henri Tudor

Based on a peer review by order of the Ministry of Higher Education and Research of Luxembourg

In this document (*the Management Board*) of Public Research Centre Henri Tudor provides a response to the report on the evaluation of the Resource Centre for Environmental Technologies (CRTE) of 16 December 2011.

As a general remark it can be stated that the evaluation was an enriching process performed by competent experts. It comes up with a number of important recommendations, both with respect to organization and orientation of CRTE's activities. Although the composition of the expert panel was strongly oriented towards water research (three of the four experts came from the water sector), the experts managed to get a good comprehension of the overall role and missions of CRTE, as reflected by the following citation from the report: *".. CRTE's particular position as an interface between research and practice to be one of its main strengths. Another remarkable strength is the holistic approach to environmental issues practised by CRTE" (Evaluation report, p.4).* The discussions with the experts during the hearing were constructive and fruitful, even if the inherent limitations of the evaluation exercise in terms of possible insight into processes and results, given by time constraints and the necessary focus on selected topics, did not allow clarifying a number of critical points, which are addressed in the evaluation report.

One important point relates to the basic mission of the CRTE: the Resource Centre for Environmental Technologies is a common structure of CRP Henri Tudor and the Ministry for Sustainable Development and Infrastructures (MDDI), created in 1998 to provide science-based support to the definition, evaluation and implementation of environmental policies. Although, over the years, CRTE developed a number of research agendas in order to better comply with this basic mission, roughly one quarter of its activities is still governed directly through contracts with three different Ministries (Ministry of Interior and for the Greater Region and Ministry of Economy and Foreign Trade in addition to the MDDI). As a result an important part of CRTE's working and research topics is inherently demand-driven, leading to a broader diversity of activities. Although we acknowledge the experts' findings that the core research agendas demand a clearer definition and vision (**recommendation 1**), CRTE will maintain its role as a mediator between environmental policy makers, administrations and industry, which it has developed successfully.

This role asks also for a broad range of human resource profiles, competences and skills and the implementation of the related responsibilities within the organizational framework of a research centre explains, to a certain extent, also the difficulties of the experts to understand the organization of CRTE (**recommendation 2**). The attribution of roles and responsibilities within CRTE was oriented in the past primarily towards fulfilling best the policy-support missions at national level, rather than developing a focused, independent research agenda, and the organization is therefore not directly comparable to a more academic-type research structure. The experts recognize that CRTE has performed well in the past with respect to these missions: *"CRTE has managed well to provide solutions to administrations and other stakeholders by connecting practical*

problems to research questions." (Evaluation report, p.4) and *"With its activities CRTE supports the development and successful implementation of national and European environmental policies" (Evaluation report, p.4).*

Both the CRTE team and its activities have known a dynamic development over the last years, which required repeated organizational adaptation. In addition to the still strong embedment in national networks, where CRTE is confronted with very practical policy-related requests and questions, CRTE is facing increasing expectations of scientific output and excellence as well as economic impact, e.g. in terms of patents and licenses. These challenges are tackled in the second performance contract of CRP Henri Tudor by the implementation of Innovation Programmes at corporate level, with as a consequence a disentangling of the multiple objectives and a clarification of the roles within Tudor. As a department, CRTE will concentrate on the development of coherent research agendas, e.g. in the field of environmental assessment methodologies, and structure the policy support missions, while the corporate innovation programmes (CIP) allow connecting to economic targets. The experts recognize, however, the potentially high costs in administration and coordination of such an organisation. CRTE is fully aware of these risks and strives to maintain a cost-efficient and lean management structure (**recommendation 3**). It should be noted, however, that the experts seem to see in the CIPs only a mean to foster Tudor internal collaboration, whereas the scope and impact in terms of strategy alignment, competence bundling and sector penetration are expected to go far beyond this limited perception.

Conclusion recommendations 1-3:
CRTE acknowledges the needs for clarification of CRTE's organization, based on a clear description of the core research topics and strategies. A reshaped organization should, however, be aligned with the overall Tudor organization and governance scheme and also take into account the specific missions with respect to environmental policy support. Working on a lean and efficient organisation and highlighting the department contributions to the research agendas of the CIP, which are currently deployed within the Centre, will be a priority issue for CRTE management in the 1st semester 2012.

These efforts will also help to further strengthen CRTE's research base (**recommendation 4**). Enhancing the international visibility in the research community through scientific excellence is one of Tudor's main three objectives for the second performance contract (next to increasing Luxembourg's innovation capacity and providing policy support). The experts recognize the achievements over the last years with respect to international recognition: *"CRTE is well known in the wastewater treatment community, and the unit has managed to collaborate with recognized scientific partners. In the field of life cycle assessment the unit is also gaining increasing recognition within the international research community." (Evaluation report, p.5)* and *"The expert team considers that the number and quality of collaboration projects with foreign universities is good." (Evaluation report, p.11)*. The experts also highlight that the scientific output of CRTE is increasing, as a result of the research work performed mainly during the last 5 years. There is obviously a time span between setting up critical mass in research areas and scientific output in terms of publications as illustrated e.g. for the research on Life Cycle Assessment (LCA) methodologies, which started at CRTE in 2006.

Setting up collaborations and networks at regional and European level is part of the strategy for increasing the international visibility. In 2010 the share of European co-funded activities at CRTE was approximately 25%, most of this funding coming from policy-making relevant programmes such as Interreg and LIFE+.

Conclusion recommendation 4:
Providing science-based policy support requires the development of scientific excellence in core research areas and the establishment of strong research networks at national and international level. CRTE is aiming at increasing scientific output and visibility in these areas, in line with the Corporate Policy "Improving scientific excellence" as defined in Tudor's second performance contract (2011-2013), thereby following the recommendation of the experts. CRTE is also working on increasing its share of FP funding in its European project portfolio to an appropriate level, although the participation in FP programmes and consortia is very time-demanding and costly, both during the definition and the realization phases. CRTE is currently partner in an FP6 project and contributes with its LCA competences to 2 FP7 projects which have been accepted in 2011. Moreover, CRTE participates in the drafting of 5 FP7 proposals, to be submitted in early 2012 (3 in the area of wastewater treatment, 1 in LCA, 1 in environmental modelling).

With respect to laboratory infrastructure, especially for water and wastewater analysis, CRTE is already now following closely the **recommendation 5** of the experts. CRTE considers the collaboration with the main water policy maker and other important research actors in the water sector as a strong asset. All relevant activities, e.g. in the field of surface water or groundwater pollution by xenobiotics at CRTE, including the collection of data, are realized in close collaboration with (and largely co-funded by) the Luxembourg Water Agency (or the Ministry of Interior and for the Greater Region) and/or water syndicates. All relevant data are therefore made available to and used by the main water policy makers in Luxembourg. Building strong partnerships and relying on existing infrastructures in the greater region rather than duplicating expensive laboratory equipment has been a guiding principle since the creation of CRTE and illustrates the responsible use of public resources. *(Evaluation report, p.5: "(..) the CRTE team has access to well-equipped external laboratories, such as the high-quality analytical laboratory of the Luxembourg water agency as well as the University of Trier".)*

With an increasing volume of activities CRTE has recognized, however, the need to further develop its basic laboratory infrastructures and has investigated already in 2011 a number of scenarios for this development.

Conclusion recommendation 5:
CRTE has started initiatives to strengthen water laboratory collaboration with other research actors in Luxembourg, in addition to the on-going collaborations. Within the framework of a common PhD thesis on the degradation of xenobiotics in wastewater treatment with the University of Luxembourg (Prof. Jo Hansen; Faculty of Science, Technology and Communication) CRTE is contributing with equipment for advanced wastewater analysis to the laboratory of the University. CRTE has also taken the initiative end of 2011 to investigate the possibility and feasibility of the use of free analytical capacities in the laboratories of CRP Gabriel Lippmann. As the degree of occupation both of the laboratory space and analytical instruments is high, the possibilities seem to be limited, but

the workflows for realizing a pilot measurement campaign will be developed and tested in 2012. An interesting perspective in the medium and/or long-term is the setting-up of common laboratory infrastructure, e.g. within the framework of the extension of the current facilities at CRP Gabriel Lippmann.

A major drawback of the assessment process itself is the fact that, whereas the CRTE department was evaluated as a whole, only two units GEOSAT / ECOSAT with a strong focus on water research were evaluated at CRP Gabriel Lippmann. Although the Ministry of Research strongly emphasizes the fact that no comparison between the different structures was intended, the recurring allusions towards overlap, lack of trust and communication between CRTE and GEOSAT / ECOSAT units are regrettable as they cast an overall negative image on CRTE's broad external collaborations and strong networks in other domains, both at national and international level (OAI, FEDIL, Cluster CREER - Research in Ecodesign and Recycling, REACH members states committee, etc.). Both the choice of the experts as well as this imbalance in evaluated activity profiles put an intrinsic bias on the assessment, overemphasizing the topic of surface water and groundwater research and disregarding the important activities that CRTE develops with industrial partners and public authorities, e.g. in areas of clean technologies and energy policy.

It should be stressed also that other collaborations with ECOSAT on wastewater treatment as well as collaborations outside the GEOSAT / ECOSAT activities that have been initiated are unfortunately not considered in the assessment (although mentioned in the self-assessment report). Prominent examples are the Luxcycle project (Dry Monofermentation of energy crops, in collaboration with Lippmann and the University of Luxembourg) or the Research Platform for the valorisation of biowaste in an urban environment, launched in collaboration with Lippmann and the University of Luxembourg in the framework of the Luxembourg EcoInnovation Cluster in 2010.

CRTE's research in surface water and groundwater is oriented towards modelling pollutant fate (and ecotoxicological impact) in view of environmental management as a decision support whereas GEOSAT / ECOSAT are addressing primarily investigation of basic processes for problem understanding, hydrological cycle on different scales, the various types of bio-indicators and the subject of water flux and element flux in catchments *(as recognized by the experts, see also footnote in the evaluation report, p11,* **recommendation 6***)*. The approaches of both institutions are clearly different and the specific need of data and use of the data collected differ. Measuring some similar (and mostly basic) parameters does not mean that there are great overlaps or even duplications. Moreover, as explained above, all relevant data are collected by CRTE in collaboration with and made available to water policy makers, which should be ultimately the end-users of all results originating from public water research in Luxembourg, thus avoiding potential duplication.

Conclusion recommendation 6:
Although the experts' analysis of the collaboration between Tudor and Lippmann in the field of environmental research is distorted and does not reflect the whole picture, CRTE fully supports the recommendations of strengthening collaboration, in view of capitalizing on existing complementarities and synergies and building critical mass for a strong environmental research cluster in Luxembourg. CRTE also agrees that communication at all hierarchical levels is the most adapted mean to foster these research synergies. CRTE management has i.e. taken the initiative to

propose three topics for common FNR CORE project submission in 2012 (2 water, 1 LCA/ecosystems), with more in-depth thematic discussions to be continued at researcher's level over the year.

CRTE management also agrees with the need and strategic importance to strengthen collaboration with the University of Luxembourg and recognizes the potential and added-value of this collaboration, as described by the experts (**recommendation 7**). Two of the on-going four PhD theses at CRTE are conducted together with the University and there are current, as well as past, collaborations both in FNR and European projects and at institutional level (e.g. working group for sustainability development). CRTE has also been hosting bachelor and master students, although in the past the number of applications was unfortunately very low. However, there is a number of encouraging recent developments and strengthening the links with the University is discussed at various levels (master classes, visiting professors, doctoral schools, etc.). But as the University does not put forward "Environmental Sciences" as a key research topic and does, moreover, not have a clear corporate strategy for collaboration with the Research Centres in Environmental Sciences, these developments depend largely on the responsiveness and initiatives of individual professors in the faculties and research units[1] and the possibilities to push forward the collaboration are strongly limited at CRTE level.

Conclusion recommendation 7:
CRTE fully supports the experts' findings that in order to increase the collaboration between the Public Research Centres and the University of Luxembourg in Environmental Sciences beyond the level of individual initiatives between departments and researches, a stronger governance of the Public Research in Environmental Sciences is needed, involving both the top management of the institutions as well as the Ministry of Research. These actors should set up a framework for RDI in Environmental Sciences in Luxembourg, with the objectives to

- foster synergies and interdisciplinary collaboration and remove administrative barriers, e.g. for a joint participation of the University and the CRPs in European research programmes,
- accelerate the creation of a graduate school in environmental sciences, which takes full benefit of the competences of the CRPs, e.g. for teaching in master classes, and entitles also high-profile researchers from CRPs to supervise PhD students, e.g through adjunct and/or joint professorships,

thereby increasing the national and international impact and visibility of a research domain of imminent importance for Luxembourg, which alone in two CRPs Tudor and Lippmann currently employs more than 100 researchers.

Finally, CRTE acknowledges **recommendation 8** about maintaining the current financing scheme of CRTE's activities, which has successfully allowed it in the past to fulfil its diverse missions. CRTE will continue to work on the right answers to all the expert's recommendations and trigger well-thought and -balanced measures in order to further improve CRTE's and Tudor's performance and impact.

[1] For CRTE activities mainly: engineering research unit within the Faculty of Science, Technology and Communication (FSTC) and IPSE (Identités. Politiques, Sociétés, Espaces) research unit within the Faculty of Language and Literature, Humanities, Arts and Education (FLSHASE)

INTERFACE

Report on the evaluation of the Laboratory of Cardiovascular Research, CRP-Santé

Based on a peer review by order of the Ministry of Higher Education and Research of Luxembourg

16 December 2011

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1 INTRODUCTION

The Ministry of Higher Education and Research (MESR) of Luxembourg mandated Interface Policy studies Research Consulting, Switzerland, to organise and lead the evaluation of four research units, including the Laboratory of Cardiovascular Research of the *Centre de Recherche Public Santé* (CRP-Santé). In this report the Laboratory of Cardiovascular Research will be referred to as the "evaluation unit".

The observations and recommendations presented in this report are based on a peer review by the following three experts working in the evaluation unit's research fields:

- Dirk L. Brutsaert, MD, professor emeritus of medicine and physiology, University of Antwerp, Antwerp, Belgium
- Vera Regitz-Zagrosek, MD, Institute of Gender in Medicine (GiM), Center for Cardiovascular Research (CCR), Charité – Universitätsmedizin, Berlin, Germany
- Prof. Dr. med. Hans Rickli, Cantonal Hospital of St. Gallen, St. Gallen, Switzerland

Additionally, Dr. Stefan Rieder and Mirjam Inauen of Interface contributed to the peer review by bringing in their expertise in the evaluation of strategies and organisational structures.

The peer review consisted of the reading of a self-assessment report written by the Laboratory of Cardiovascular Research and a hearing at the evaluation unit. The hearing was composed of a presentation, a group discussion of the self-assessment report and several individual interviews with the heads of CRP Santé and the Laboratory of Cardiovascular Research and with researchers working in different sections and at different levels at the Laboratory of Cardiovascular Research.

This report is structured in two parts: The first part discusses the evaluation team's observations from the evaluation process. This part will follow the structure of the self-assessment report. The second part presents the expert team's most important recommendations to further develop existing strengths and overcome observed weaknesses; it aims to increase the learning effect of this evaluation.

2 RESULTS OF THE EVALUATION

2.1 INPUT

Activities and objectives

Since its creation in 2003, the Laboratory of Cardiovascular Research has developed interesting and focused research questions that have a lot of potential.

An important component of the clinical research at the Laboratory of Cardiovascular Research is the Luxembourg Acute Myocardial Infarction Registry (LUCKY). In the experts' view, LUCKY is a unique registry with a great potential. The experts especially appreciate that it is used for research on prognostic biomarkers (see below). However, even though the Laboratory has been active in exploiting the data from the registry, valorisation could still be improved (e.g. by using the data to test hypotheses or develop new scientific questions).

The Laboratory has also been active in research projects on adenosine, which have produced important results, such as aspects of remodelling. But in the experts' view, generally, research on adenosine is rather exhausted. However, the approach that involves the testing of specific hypotheses related to remodelling (or other phenotypes) in animal models should be maintained.

The Laboratory is focussing on the discovery of biomarkers for myocardial infarction. The Laboratory aims at using micro RNA as diagnostic and prognostic biomarkers, The experts consider that particularly the second approach is very innovative and promising in view of the available patient cohorts and datasets. The experts favour collaboration with other departments to analyse also socioeconomic and psychosocial aspects. In addition, they suggest taking into consideration imaging techniques. In the experts' view, research on biomarkers should be based on systems biology, as systems biology could contribute to emphasising the links between biomarkers and to identifying key biomarkers in a network approach.

The experts see the inputs of systems biology as one of the Laboratory's major strengths. They believe that systems biology should influence the research agenda of the whole unit.

Organisation

The expert team understood that the Laboratory is currently in an important process of defining a new research agenda and establishing a corresponding organisational structure; this process is not finished yet. The team is currently organised along the Laboratory's two main research lines: for one, the identification of patients at risk of myocardial infarction along systems biology and, for another, the identification of new treatments for these patients. The latter line of research includes a number of hypothesis-driven approaches and uses animal models; it should not be given up. At present, the description of the Laboratory's organisation in the self-assessment report was not convincing. An old and a new organisational diagram were presented, but neither of them provided a good representation of the Laboratory's current research activities

and processes. Also, the collaborators at the Laboratory did not seem to understand their exact place in the organisation of the Laboratory, and their rights and duties were partly unclear. The explanations at the hearing made the unit's organisation a little clearer.

Human Resources

The team of the Laboratory of Cardiovascular Research consists of senior researchers, postdocs, PhD students and Master's students, which the expert team considers a good composition for a research team.

The PhD students seem satisfied with the working conditions. Supervision works well, and senior researchers are easily accessible.

The experts are of the opinion that the Laboratory's PhD students and junior researchers should receive continuous and systematic training in laboratory techniques, soft skills and grant writing. Together with the University of Luxembourg, CRP-Santé is now planning to develop joint PhD programmes. The Laboratory of Cardiovascular Research will not be affected by these plans. The experts would therefore encourage CRP-Santé and the Laboratory to set up a PhD programme for cardiologists together with the University. This would be facilitated by the fact that the head of the Laboratory holds the postdoctoral qualification *Habilitation à diriger des recherches*.

From his clinical work at the hospital, the head of the Laboratory brings in valuable input, and the experts clearly recognise the mission and vision of translational research. Unfortunately, the time that he can spend in the Laboratory and diffuse his knowledge is very limited due to his large involvement in the hospital. Also, the transfer of knowledge from the hospital to the Laboratory depends mainly on one person. Thus, the expert team discussed how input from the hospital could be better disseminated to all members of the group. They believe that the Laboratory should be active in establishing closer interactions with the hospital so as to allow for translation of science between the two institutions.

Financial resources

The Laboratory has not been very successful in obtaining competitive means, the funds from the *Fonds National de la Recherche Luxembourg* (FNR) and European Framework Programmes being negligible in the period under evaluation. In this area, the evaluation unit has therefore not reached the goal for CRP-Santé that was fixed in the past performance contract with the MESR. However, the experts acknowledge that it is difficult for such a young unit to obtain competitive funding. Still, according to the experts, the Laboratory should continue its efforts to acquire grants from the FNR and to participate in consortia that are applying for European funds. Additionally, the Laboratory's researchers should be trained and supported in grant writing. The CRP-Santé has established courses of that kind, an offer which the experts encourage the Laboratory to utilize.

Infrastructure

The fast growth of the team over the past years has not been reflected in the Laboratory's infrastructure. The working conditions with respect to office space that the ex-

perts observed during the hearing are, in their view, unacceptable. To cite only one example, ten people are working in a room 28 square meters in size, which is unhealthy not only physically but also mentally. Furthermore, the experts assume that this situation has a negative influence on the team ambiance and the scientific creativity of the Laboratory's researchers. Additionally, the space situation puts a clear limit on the future growth and development of the team. In contrast to office space, the space and equipment available in the laboratories are appropriate.

2.2 PROCESSES

External cooperation and communication

The Laboratory of Cardiovascular Research has vital connections and a good exchange with universities in other countries. Also, the number of collaborations with these partners is adequate.

Each PhD student working at the Laboratory is (co-)supervised by a professor at an external University. For the supervision of the PhD students, therefore, the Laboratory is cooperating with the Universities of Nancy, Homburg, Liège and Brussels.

Further, the Laboratory has established cooperations on promising research projects, for instance with the University of Basel.

In the experts' view, both types of collaboration should be sustained and further developed. Also, they encourage the Laboratory to continue to set up formal agreements with these universities.

Internal cooperation and communication

The expert team observed several shortcomings with respect to internal communication. Most importantly, the team is insufficiently invited to participate in the decision-making process, especially regarding the definition of research questions and the strategy of the Laboratory. Moreover, there have been difficulties in communication among PhD students and between postdocs and senior researchers.

Fortunately, the evaluation process and especially the completion of the self-assessment report have allowed the Laboratory's management to recognise these problems. Thus, regular team meetings have been introduced in order to stimulate internal discussion and exchange. However, the experts are in doubt about the effectiveness of these team meetings.

The experts see a connection between these communication problems and the lack of a clear organisation, as described above. Thus, communication is obviously complicated by the fact that rights, duties and chains of command are unclear.

2.3 OUTPUT

Given the relatively short existence of the Laboratory, it is comprehensible that the number of publications is still low. In the experts' view, the Laboratory has nonetheless managed to produce papers of a high quality, but publications in high-ranking journals are still missing. The experts are convinced that in the future, the Laboratory's results will achieve adequate recognition in the international research community. They therefore encourage the team to continue its efforts to publish in journals with high Impact Factor scores.

Also, the experts observed an imbalance between the unit's researchers with respect to the authorship of their publications in the last three years. Clear incentives for co-authorship in order to achieve better collaboration among the members of the teams should therefore be established at all levels.

The expert team acknowledges that in the period under evaluation, the Laboratory was successful in obtaining some patents.

Surprisingly, no PhD degrees were completed in the years 2009 and 2010. The experts consider this a real deficit, and they are of the opinion that efforts should increase not only to hire and promote PhD students but also to guide doctoral students to the completion of their dissertations. Based on the description in the self-assessment report, however, this will not represent a major problem.

2.4 LONG-TERM EFFECTS AND RELEVANCE

Although the Laboratory has produced relevant research results, its visibility in the international research community is still low, as already mentioned above. Concerning its long term-effects and relevance, the experts consider that the Laboratory is in line with its goals. Thus, the group contributes to improve public health by aiming at better and more personalized treatment of myocardial infarction in Luxembourg. It may provide novel biomarkers that can be elaborated further together with private companies. The Laboratory can develop now a patient cohort, database and biobank that might lead to an outstanding long-term project (if not limited too much by legislation). Its work should also attract the attention of pharmaceutical and insurance companies.

2.5 REFLECTIONS AND STRATEGY FOR THE FUTURE

During the whole evaluation process and especially in the self-assessment report, the Laboratory demonstrated its ability to reflect on its strengths and weaknesses. The expert team highly appreciates the Laboratory's openness (especially regarding the problems in internal communication) and acknowledges that the team understood the evaluation process as an opportunity to improve its performance.

Regarding the Laboratory's research strategy, two points have to be addressed:

Although research on adenosine is rather exhausted, the Laboratory has built up mod-

els and know-how that should be further developed. The understanding of mechanisms underlying cardiac remodelling by focusing on angiogenesis, extra cellular matrix, lymphangiogenesis and endothelial progenitor cells should be further exploited. The experts see opportunities for interesting future research based on mechanistic or hypothesis-driven research questions, especially when combined with systems biology. This requires access to animal handling facilities.

The Laboratory's research in systems biology is very promising. In the interviews, the experts observed that the unit has recognized the importance of systems biology and is planning to further develop this approach. Even though it will be challenging to integrate systems biology in all of the Laboratory's research areas, the experts would like to encourage the unit to continue its activities in this direction.

3 SUMMARY AND RECOMMENDATIONS

3.1 SUMMARY

Since its creation in 2003, the Laboratory of Cardiovascular Research has developed interesting and focused research questions that have already produced important results. The unique registry LUCKY (Luxembourg Acute Myocardial Infarction Registry) is an important component of the Laboratory's clinical research and has great potential that the Laboratory intends to exploit further. The registry is mainly used for research on diagnostic and prognostic biomarkers. Particularly the latter appears promising and has the potential to lead to innovations that directly affect public health in Luxembourg. The Laboratory's team is also running a well-established line of mechanistic research. Its focus will now be shifted towards more modern concepts such as systems biology, analysis of micro RNA and zebra fish models. The experts see the planned transversal integration of systems biology into the Laboratory's research fields as one of its major strengths. Nevertheless, access to animal models will be crucial for further development.

The Laboratory is currently in an important process of defining a new research agenda and establishing a corresponding organisational structure; this process is not finished yet. A clear organisational structure, including a definition of the rights and duties of all collaborators is under development. This will include better involvement of the whole team into the decision-making process. Whereas space and equipment in the laboratories are appropriate, the working conditions with respect to office space are unacceptable.

The Laboratory's relationship to the nearby hospital is hampered by structural limitations. As only the Laboratory's head is involved in the hospital as a clinician and structural connections at lower levels are missing, all connections entirely depend on him, a situation that represents an unequal burden.

The Laboratory established a number of fruitful collaborations with foreign universities. A number of collaborations with neighbouring universities in France, Belgium and Germany are needed for PhD training and their structures should be further developed. Other collaborations that are based on more scientific aspects represent a prerequisite for involvement in European grant programmes. Since the Laboratory is relatively small and new, its integration into European Framework Programmes still remains to be developed. Also, grant acquisition from the *Fonds National de la Recherche Luxembourg* (FNR) has to be improved. This will also enhance the impact of publications. A positive point is that the unit was successful in obtaining some patents.

Concerning its long-term effects and relevance, the Laboratory is in line with its goals and may improve public health by aiming at better and more personalized treatment of myocardial infarction in Luxembourg as well as at identifying novel biomarkers. The Laboratory is developing a patient cohort, database and biobank that might lead to an outstanding long-term project. Its work should also attract the attention of pharmaceutical and insurance companies.

3.2 RECOMMENDATIONS

Based on the observations stated above, the evaluation team formulates the following recommendations.

Recommendation 1: Promote systems biology as a horizontal approach

The experts consider systems biology to be a promising topic for the Laboratory's future research agenda. Therefore, they are of the opinion that systems biology should influence each of the Laboratory's research projects as a horizontal approach. The focus on systems biology could be further strengthened by understanding it as a platform for current and future projects.

Further, the experts encourage the Laboratory to continue with mechanistic approaches and acquiring new animal models, such as zebra fish. Consequently, it is important for the Laboratory to obtain access to animal facilities that enable new therapeutic studies for the treatment of cardiac remodelling. The Laboratory should therefore also have good access to the new animal facility that is currently being built by CRP-Santé.

Recommendation 2: Assure the continuity of the LUCKY registry

The Laboratory's LUCKY registry is unique and has a great potential. Even though the Laboratory has been active in exploiting the data from the registry, valorisation could still be improved. For instance, the experts see a great potential to gain European funds for research projects based on analysis of data from the LUCKY registry. Given the importance and potential of the registry, its maintenance and further development must absolutely be assured by solid and continuous financing.

Recommendation 3: Improve the working conditions with respect to space

At the hearing, the expert team observed unacceptable working conditions with respect to the office space available for the Laboratory's researchers. A new building is expected to be available in 2014. In the experts' view, however, an immediate solution is needed to improve the situation. Concretely, the Laboratory's leaders should rent at least two additional offices within the next two to six months at the latest. The acquisition of additional office space should be seen as an opportunity for the Laboratory's leaders to express their appreciation for their team and to show their willingness to improve internal communication problems. From this point of view, the costs for additional rooms can be seen as a very valuable investment.

Recommendation 4: Develop a new organisational diagram and improve internal communication

The Laboratory is currently in an important process of defining a new research agenda and establishing a corresponding organisational structure; this process is not finished yet. In the experts' view, the Laboratory needs to develop a clear organisational diagram, showing every collaborator's formal position in the team. Additionally, a short but clear job description should be elaborated for each collaborator. Also, people at the bottom should be given more responsibilities; especially the position of researchers and senior researchers should be strengthened.

When optimising the organisational diagram, the Laboratory should address the fostering of bottom-up communication. The development of a new organisational diagram should therefore involve the whole team in a bottom-up process. Given the unit's problems in internal communication, however, external support for the definition and implementation of a new organisation might be considered. Support could be provided by the director of CRP-Santé or a professional expert in organisational development.

Recommendation 5: Integrate bottom-up approaches in the development of a future research agenda

For every research institution, it is absolutely crucial that new ideas are developed in a bottom-up process. The leaders of the unit play a central role in the fostering of internal communication – not only top-down but also bottom-up. Thus, the leaders should coordinate the development of new ideas and create incentives to communicate through motivation, moderation and guidance. Within the leading management of the Laboratory, additional skills for conflict management as well as for stimulation of participation and bottom-up communication should therefore be developed.

Recommendation 6: Set up a PhD programme and strengthen cooperation with the hospital

The experts are of the opinion that the Laboratory's PhD students and junior researchers should receive continuous and systematic training in laboratory techniques, soft skills and grant writing. Together with the University of Luxembourg, CRP-Santé is now planning to develop joint PhD programmes. The Laboratory of Cardiovascular Research will not be affected by these plans. The experts would therefore encourage CRP-Santé and the Laboratory to set up a PhD programme for cardiologists together with the University. This would be facilitated by the fact that the head of the Laboratory holds the postdoctoral qualification *Habilitation à diriger des recherches*. Moreover, the leaders of the Laboratory's units should elaborate a personal career plan for each collaborator in a joint effort, and collaborators' career development should then be discussed on a regular basis.

The expert team also thinks that the Laboratory should be active in establishing closer interactions with the hospital, so as to allow for translation of science between the two institutions. Concretely, the experts recommend that incentives are created for MDs to stay in research. For instance, all of the hospital's trainees in cardiology could be exposed to research in the Laboratory for a limited period of time. Subsequently, for some of them a future PhD programme could offer a special track for MDs.

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PROJECT REFERENCE

Lucerne, 16 December 2011
Project number: P11-10

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Luxembourg, le 24 mai 2012

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Monsieur le Ministre,

Suite à votre demande nous avons le plaisir de vous transmettre en annexe la réponse du CRP-Santé au rapport d'audit de son département de recherche cardiovasculaire.

Veuillez agréer, Monsieur le Ministre, l'expression de notre très haute considération. .

Dr. Jean-Claude Schmit
Directeur Général

Mr. Frank Gansen
Président

Annexe : - Réponse du CRP-Santé au rapport d'audit de son département de recherche cardiovasculaire

Réponse du CRP-Santé à l'audit externe de son département de recherche cardiovasculaire

Le rapport d'audit ainsi que la prise de position du responsable de laboratoire (Dr. Daniel Wagner) ont été discutés par le conseil d'administration lors de la séance du 2 mai 2012 et le conseil d'administration a chargé la direction générale d'élaborer la réponse suivante basée sur la prise de position du responsable de laboratoire.

In response to the audit and its recommendations, the management of CRP-Santé together with the head of laboratory propose the following improvements:

Recommendation 1: Promote systems biology as a horizontal approach
The experts and the team members recognize that systems biology is a promising topic for the laboratory. Systems biology will serve as a platform for future projects. To facilitate this approach, the following measures have been taken:

1.a. Dr. Francisco Azuaje, our expert in systems biology, will have the possibility to develop an own research team (cfr. also recommendation 4 below). This step will be associated with more independence for this researcher and opportunities of growth in staff and space. The latter is necessary to enable a systems biology approach in all projects.

2.a. The zebrafish model has been implemented in the laboratory by Dr. Sophie Rodius, PhD through funding of the Luxembourg Society for Cardiovascular Research and in collaboration with zebrafish experts in Madrid, Spain and Karlsruhe, Germany. This model will serve future research projects by the laboratory and external collaborations.

Recommendation 2: Assure the continuity of the LUCKY registry
It has been recognized by the experts and team members that this registry is unique and that value derived from the registry should be improved and its financing should be guaranteed. To follow this recommendation, the following measures have been taken:

2.a. Members of the recently created Competences Center for Methodology and Statistics (CCMS) of the CRP-Santé, i.e. Dr. Oliver Collignon, PhD and Prof. Stephen Senn have started to analyze the LUCKY data.

2.b. Members of the Centre d'Etudes en Santé (CES) of the CRP-Santé, Marie-Lise Lair and collaborators are already actively planning with the principal investigator to submit a national project to the Ministry of Health to support funding of the LUCKY registry. One of the major aims of this project will be to determine why women with acute myocardial infarction have worse short term outcome and worse medical treatment but better long term outcome in Luxembourg. Preliminary data on 200 LUCKY patients indicate that this is the case.

Recommendation 3: Improve the working conditions with respect to space

The team members and the general manager of the CRP-Santé agree that working conditions in the available office space are unacceptable. To rapidly improve this situation, the following measures have been taken:

3.a. New office space for 3-4 persons has already been created adjacent to the laboratory.

3.b. New office space for computational biologists will be obtained in the main CRP-Santé building (or close to it) in the next two to six months at the latest.

Recommendation 4: Develop a new organizational diagram and improve internal communication

It was recognized by the experts and the research team that the department needs a new organizational diagram and better internal communication. Significant discussions between the members have been made. The following organisational diagram is proposed. This includes a change in the name of the department and also takes into account the 2012 recommendations by the Ministry of Research regarding structure and organization of research labs.

Department of Translational Cardiovascular Research (TCR)

Head of department: Daniel R. Wagner, MD, PhD

The department of TCR is focused on understanding the mechanisms and finding new biomarkers of cardiac repair/remodelling after myocardial infarction.

The department is active in clinical research and experimental integrated research. It is composed of the following research teams:

1. National acute myocardial infarction registry (LUCKY)

Head: Daniel R. Wagner, MD, PhD

Staff: two research nurses

All consenting patients presenting in Luxembourg with acute ST elevation myocardial infarction (STEMI) and referred for primary coronary intervention at the Luxembourg Heart Institute (INNCI) are enrolled in the LUCKY registry. All patients have blood taken and have regular follow-ups.

2. Azuaje research team (Systems biology)

Head: Francisco Azuaje, PhD

Researcher: Sophie Rodius, PhD

The Azuaje research team is focused on understanding the mechanisms of cardiac repair after myocardial injury. Sophisticated computational modelling is combined with the state-of-the art zebrafish model of cardiac injury to probe this challenging multi-scale problem.

3. Devaux research team (Molecular and cellular biology)

Head: Yvan Devaux, PhD
Researcher : Isabelle Ernens, PhD
The Devaux research team is focused on understanding the molecular and cellular mechanisms of cardiac remodelling after myocardial injury. Mouse and rat models of myocardial infarction are combined with state-of-the art molecular biology including microarrays and microRNAs.

Separation into two different research teams will give the leaders and the researchers more independence. This will also foster the bottom-up approach. Both units will have clearly defined budgets, staff and grants. However, equipment in the laboratory will be shared as necessary. It is expected that this separation will improve internal communication. Indeed, it is one of the goals of the new diagram to facilitate the exchange of expertise in systems biology (Azuaje) and in molecular cardiology (Devaux).

Internal communication will be improved through regular meetings and meeting notes will be disseminated. The meetings will be as follows:

Department meeting: 1 per 3 weeks. All members of the laboratory are attending. One person is presenting semi-final research work or new projects.
Research team meeting: 1 per week. All members of the research team are attending. The head of the department will attend on a regular basis, at least 1 per month.
Senior luncheon meeting: 1 per week. All three heads are attending. The researchers will attend on a regular basis, at least one per month.
Department one day retreat: 1 per year. All members of the department are attending. Discussion of strategy, past and future projects in the morning, social activities in the afternoon.

Recommendation 5: Integrate bottom-up approaches in the development of a future research agenda
The researchers and the management of CRP-Santé are glad to see that the auditors value a bottom-up approach in the research agenda. The reorganization of the department has taken this into account and bottom-up communication has already significantly improved.

Recommendation 6: Set up a PhD program and strengthen cooperation with the hospital.
Together with the management of CRP-Santé, the department will try to set up a PhD program for cardiologists. This is however a mid-term objective. Currently, the laboratory participates already in PhD training in collaboration with Universities from abroad.

In the short term, the division of Cardiology of the Centre Hospitalier Luxembourg (CHL) has decided to give 6 months of protected research time to cardiology fellows. This is a first step to encourage MDs to stay in research. In addition, it will be expected from future cardiologists at the CHL or INCCI to have a significant interest and background in research. The department is also open to collaboration with MDs from other Luxembourg hospitals.

INTERFACE

Report on the evaluation of Geography and Development (GEODE), CEPS/INSTEAD

Based on a peer review by order of the Ministry of Higher Education and Research of Luxembourg

16 December 2011

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1 INTRODUCTION

The Ministry of Higher Education and Research (MESR) of Luxembourg mandated Interface Policy studies Research Consulting, Switzerland, to organise and lead the evaluation of four research units, one of them Geography and Development (GEODE) at the *Centre d'Etudes de Populations, de Pauvreté et de Politiques socio-économiques* (CEPS/INSTEAD). In this report GEODE will be referred to as the "evaluation unit".

The observations and recommendations presented in this report are based on a peer review by the following three experts working in the evaluation unit's research fields:

- Prof. Dr. Peter Baccini (Dr. sc. nat. and Dr. honoris causa), emeritus professor at ETH Zurich, Switzerland
- Dr. Michel Rey, former head of CEAT (*Communauté d'études pour l'aménagement du territoire* CEAT), EPFL, Switzerland
- Prof. Dr. James Scott, University of Eastern Finland, Finland

Additionally, Dr. Stefan Rieder and Mirjam Inauen of Interface contributed to the peer review by bringing in their expertise in the evaluation of strategies and organisational structures.

The peer review consisted of the reading of a self-assessment report written by GEODE and a hearing at the evaluation unit. The hearing was composed of a presentation, a group discussion of the self-assessment report and several individual interviews with the heads of CEPS and GEODE and with researchers working in different sections and at different levels of GEODE.

This report is structured in two parts: The first part discusses the expert team's observations from the evaluation process. This part will follow the structure of the self-assessment report. The second part presents the expert team's most important recommendations to further develop existing strengths and overcome observed weaknesses; it aims to increase the learning effect of this evaluation.

2 RESULTS FROM THE EVALUATION

2.1 INPUT

Activities and objectives

CEPS as a whole is currently in a transition phase: In the past, the institution mainly worked as a policy advisor for Luxembourg public administrations; presently, it is developing more research-oriented activities. The expert team observed that this strategic reorientation of CEPS is supported through all hierarchical levels, thus by the MESR and by the managers and researchers at CEPS and GEODE. However, the need to continue policy support on the one hand and to develop a related but focused research agenda on the other represents one of the main challenges facing GEODE.

GEODE has been active in developing its research focus and is now trying to find the right balance between services and research activities. The ideal mix between services and research has not yet been achieved in each of GEODE's four units. However, it has to be kept in mind that there will always be a certain tension between service and research and that combining these two dimensions will be a continuing challenge.

The development towards more research activities is proceeding well in the two GEODE units 'Local and cross-border mobility' and 'Cross-border metropolitan integration'. Especially the latter is active in pushing forward research-oriented projects. The two other units, 'Housing and urbanisation' and 'Spatial development', are much smaller and more service oriented. As they have been set up only recently, it is too early yet to evaluate their contribution to the evaluation unit as a whole.

The common denominator of the four units' research topics can be seen in urban development. Thus, the units are currently working on issues such as European cohesion, social spatial development, governance and urbanisation. Moreover, they have been developing these topics with a focus on cross-border metropolisation, housing, the environment and the transportation system. In the experts' view, these are interesting and relevant topics, and GEODE has developed a clear research vision.

On a national scale, with its chosen research topic "urban development" GEODE has a monopoly position at present. The researchers are aware of this situation. Consequently, GEODE's researchers are oriented towards international platforms in order to assess their intellectual competitiveness.

GEODE's research favours geographical approaches and methodologies. This orientation, which can be explained by the unit's history, is still useful and appropriate. However, in the experts' view, GEODE's research focuses too much on consequences (e.g. with respect to housing) and not enough on the factors that explain the territorial development of Luxembourg. In view of the future trans-border metropolitan development and the specificities of Luxembourg economy, it would be preferable for the evaluation unit's geographical orientation to be complemented and completed by economic approaches and methodologies so as to better anticipate territorial development. Equally, competences and knowledge in territorial governance have to be amplified,

given the specificities of the institutional context in Luxembourg. This can be done by integrating researchers with a focus on territorial development and governance or by establishing partnerships with universities that are active in these domains.

Organisation

GEODE is well organised, with an appropriate division into four units. In view of the short time that two of the four units have been in existence, the considerable difference in the sizes of the units is comprehensible.

The experts think that there is room for improvement concerning the support by CEPS' management for the evaluation unit's financial and human resources management. The administrative workload of the unit's researchers could be reduced by developing centralised administrative services (for the recruitment and development of human resources as well as for budgeting and financial controlling) within CEPS.

Human resources

The experts were impressed by the motivation of the collaborators at GEODE. They observed a very positive working climate and a real team spirit. Also, the expert team gained the impression that researchers at all levels have the freedom to define new research questions. Combined with the researchers' initiative and creative attitude, this allows new research topics to be discussed and defined in a bottom-up process.

While transforming CEPS into a research institution, a master plan for career planning within an academic structure is needed. At present GEODE has the function of a "pilot unit" in CEPS; through the activities of its senior scientists, it can illustrate how links to university faculties are built up. CEPS can encourage its researchers to apply for positions such as associate professorships by introducing tailor-made incentives.

The ratio of PhD students and supervisors is good, and accordingly, PhD students are very well supported. Competitive salaries, easy access to supervisors, a positive working climate, frequent meetings and the involvement in a PhD programme all add up to privileged working conditions, of which the PhD students are also aware. In the experts' view, GEODE should guarantee that these conditions can be maintained when hiring new PhD students.

In the whole Centre there is currently no human resources manager. CEPS' management is now planning to hire a human resources manager, a plan that is fully supported by the expert team. The experts are of the opinion that this should professionalise human resources activities, such as recruitment and development of staff and conflict management, but also should contribute to reducing the administrative work load of the leaders of the research units.

Financial resources

The expert team had difficulties understanding the procedures and responsibilities with respect to the distribution and use of the block grant at the level of CEPS. However, it was explained during the hearing that rules for the distribution among the units are about to be fixed and made transparent. CEPS' management and the leaders of the units are also discussing giving the units more room for manoeuvre in using financial

resources and enabling the units to set their own priorities. The experts fully support this, as they are of the opinion that CEPS' financial management needs more clarity and transparency and that the unit leaders could be given more independence.

Currently, the evaluation unit's block grant, guaranteed by the MESR, represents around fifty per cent of the unit's overall budget.[1] In the experts' opinion, this current relation between block grant and other funds is appropriate and should be maintained.

In the period under evaluation, GEODE has not been successful in obtaining funds from European Framework Programmes. The expert team is of the opinion that ongoing efforts to obtain such funds must necessarily be continued. Participation in European Framework Programmes will contribute to enhancing GEODE's visibility within Europe.

Infrastructure

GEODE has a well-equipped infrastructure and sufficient space.

2.2 PROCESSES

External communication and cooperation

Every PhD student working at GEODE is supervised by a professor at a university. Thus, GEODE has developed an important network with foreign universities over the past years. In the experts' view, this network offers great potential and should be further exploited in order to increase GEODE's international visibility.

The University of Luxembourg also features an institute of geography. GEODE is involved in the geography institute's Master's programme; one of GEODE's unit leaders teaches a course there as an associate professor. The expert team acknowledges the unit's involvement at the University of Luxembourg and encourages GEODE to maintain and further develop this cooperation.

Internal communication and cooperation

The expert team gained the impression that communication and cooperation between the different units composing GEODE work very well.

Quality assurance

The quality assurance regarding GEODE's PhD programme is excellent. With respect to scientific output, the unit has established a quality assurance system including systematic review of papers, which the experts consider appropriate.

[1] The block grant represented 53 per cent in 2008, 47 per cent in 2009 and 46 per cent in 2010 of the unit's overall budget (source: self-assessment report). In the same period, the share of the block grant in the overall budget of CEPS was around 60 per cent.

2.3 OUTPUT

GEODE has a good number of publications in peer-reviewed journals, and the number continues to increase. This output is thus in good accordance with the goals defined in CEPS' performance contract with the MESR.

The expert team also gained the impression that GEODE's services are well known, as the evaluation unit's activities and results are reported in the local media. The experts are also convinced that GEODE's services are useful and widely accepted by local stakeholders. However, they cannot really assess the quality of the evaluation unit's service activities, as customer satisfaction surveys are missing.

2.4 LONG-TERM EFFECTS AND RELEVANCE

GEODE's main target groups are Luxembourg ministries and the international research community. The unit has been very active in valorising its results among these groups by publishing a satisfying number of books and articles. Also, the research questions that GEODE is studying have the potential to produce results with long-term impacts.

The coverage of GEODE'S activities in the local media seems to confirm the unit's relevance as a provider of data for policy makers in Luxembourg. Still, the experts are of the opinion that the evaluation unit could broaden its impact by collaborating with public sector agencies, NGOs or private companies on the topic of urban development. Especially partnerships with private companies should be established in order to valorise the unit's activities in the economic sector. For instance, valorisation activities with partners such as the chamber of commerce, real estate companies or professional associations, particularly within the banking sector, could be considered.

Given the fact that the unit has not been in existence for long, it is comprehensible that GEODE's visibility in the European research community is still low. Efforts to increase the relevance of the unit's activities and results for European actors should therefore continue. To disseminate the unit's research results, channels other than publications, such as conferences, group discussions, presentations, meetings or seminars, might be considered.

Based on the experts' experience, a new unit such as GEODE, working on a new paradigm of urbanity and developing new tools, has to develop and establish a set of seminars and workshops, which involves inviting potential customers and actively presenting to them the unit's concepts, research results and conclusions regarding practical consequences and applications. Lively dialogue between "research" and "practice" cannot be developed on the basis of scientific publications alone.

2.5 REFLECTIONS AND STRATEGY FOR THE FUTURE

GEODE's strategy paper presented at the hearing seemed reasonable to the experts. However, the experts found room for improvement in the following areas:

- Most importantly, the experts are of the opinion that GEODE's future strategy should be closely linked to the strategy of the overall Centre. However, the experts did not find a clear vision for the scientific development of CEPS and consequently had difficulties understanding how GEODE's key topics are related to CEPS' overall orientation. In their opinion, the vision paper presented during the hearing described CEPS' organisation and the management processes but did not provide an idea of the direction in which the Centre wants to go scientifically. For instance, the experts could not see how the research topics of its units are interlinked and what the common research questions are. The reason for this might be that at the level of CEPS' management, resources for the development of such a scientific vision are insufficient.

- The experts see a great potential for GEODE to develop interdisciplinary research projects. In the experts' view, the scientific expertise that GEODE's researchers have gained over the past years should not compromise their openness to mixed scientific approaches that integrate sociological, economic, cultural and political aspects.

- As mentioned above, GEODE is required to constantly manage the balancing act between functioning as a service-providing institution and as a research organisation. It has to be recognised that the type of financial means available (relation between block grant and means coming from the private sector or public administrations) will also have an important influence on GEODE's future orientation towards more research or service activities. Thus, a strategy for GEODE needs to address how the unit plans to maintain the required flexibility.

- The two smaller units 'Housing and urbanisation' and 'Spatial development' were set up only recently and mainly as service units. However, the experts expect them to follow GEODE's and CEPS' strategy to develop more research-oriented activities. It should therefore be evaluated whether the resources invested for the set-up and maintenance of the observatories are in a reasonable relation to the practical and scientific benefits of the data that they provide. Furthermore, data collection should not only be based on demands by public administrations but also correspond to the unit's research projects. Accordingly, collected data should allow analysis of existing problems but also anticipate future developments. Finally, the leaders of the two units, together with the leading management of GEODE, should reflect on how their activities can be integrated in GEODE'S overall research agenda.

3 SUMMARY AND RECOMMENDATIONS

3.1 SUMMARY

GEODE is a part of CEPS, which in recent years has transitioned from a policy-advising institution to a more research-oriented organisation. GEODE has now chosen interesting and relevant research topics and developed a clear scientific vision. However, the ideal mix between services and research has not yet been achieved in each of GEODE's four units. Also, the experts did not find a clear vision for the scientific development of CEPS and consequently had difficulties understanding how GEODE's key topics are related to CEPS' overall orientation.

GEODE is well organised, with an appropriate division into four units. GEODE also has a well-equipped infrastructure and sufficient space. The motivation of the unit's collaborators, the working climate and team spirit as well as the supervision of PhD students are very positive. Also, communication and cooperation among the different units composing GEODE work very well. In contrast, however, the experts think that there is room for improvement concerning the support of the evaluation unit's financial and human resources management by CEPS' management. The expert team had great difficulties understanding the procedures and responsibilities with respect to the distribution and use of the block grant at the level of CEPS. Concerning the source of funds, GEODE has not been successful in obtaining funds from European Framework Programmes, and ongoing efforts to obtain such funds must necessarily be continued.

GEODE has developed an important network with foreign universities over the past years and is also involved at the University of Luxembourg. Further, GEODE's good number of publications in peer-reviewed journals is continuing to increase. The experts are also convinced that GEODE's services are useful and widely accepted by local stakeholders. However, the unit could still broaden its impact by collaborating with public sector agencies, NGOs or private companies. Finally, sociological, economic, cultural and political aspects could still be strengthened in GEODE's scientific approach.

3.2 RECOMMENDATIONS TO GEODE

Based on the observations stated above, the expert team formulates the following recommendations.

Recommendation 1: Strengthen social, economic, political and cultural aspects in GEODE's research agenda

The experts see a great potential for GEODE to develop interdisciplinary research projects. The scientific expertise that its researchers have acquired over the past years should not, in the experts' view, compromise their openness to mixed scientific approaches. The experts encourage GEODE's researchers to further integrate social, political, economic and cultural aspects into their quantitative approach towards urban development.

The expert team therefore recommends defining potential interdisciplinary research areas as well as networking and establishing collaborations with suitable external partners.

Recommendation 2: Use research results for European comparative research

GEODE's research projects need to be constantly evaluated with respect to the relevance of the results that they produce for the international research community and for the European Commission and European civil society organisations. In view of these target groups, the experts see a need to develop comparative research that provides results relevant for addressing vital social, economic and political issues of urbanisation and cohesion in Europe.

Recommendation 3: Consolidate the unit with the support of the leading management of CEPS

GEODE is a relatively young unit that has grown fast in the past years and was reorganised in 2008. Given the positive development of the evaluation unit, human resources and research plans must now be consolidated in order to assure the unit's continuity. The social integration of recently hired collaborators (team building) should therefore have priority before further expanding the team. Further, GEODE's strategy to develop more research-oriented activities should, of course, always guide the future recruitment and development of human resources.

For its consolidation, GEODE needs the support of CEPS' leading management in a threefold way:

- First, CEPS' management should support GEODE in the unit's human resources management to reduce the work load of its researchers and to install incentives for academic careers on the part of the best scientists.
- Second, the setting up of financial planning and rules for the distribution of the block grant on the level of CEPS will allow for more transparency and independence of its units.
- Third, GEODE's well established research agenda should be supported and legitimised by a clear vision and agenda for research at the level of the CEPS as a whole.

Recommendation 4: Foster collaboration with the University of Luxembourg

The expert team acknowledges the unit's involvement at the University of Luxembourg and encourages GEODE to maintain and further develop the existing cooperation. In the future, both GEODE and the university should examine their complementarities and possibilities for collaboration. Since GEODE, at present, has a clear lead in the chosen topic, the process of collaboration should not be enforced within a short time period. Otherwise GEODE is the loser and there is no winner. The relationship with the University of Luxembourg should also be addressed in GEODE'S strategy, for instance. Concretely, students at the university could acquire practical experience in empirical research by working at GEODE for a limited period of time. Moreover, the

expert team is of the opinion that efforts to collaborate should not be limited to the university's institute of geography but should also include political and social sciences departments. However, GEODE will not be able to establish collaboration of this kind on its own. Support is therefore needed. Namely, the MESR should engage in constantly fostering and accompanying the cooperation between the two institutions.

3.3 RECOMMENDATIONS TO CEPS

Even though the experts focused on the unit of GEODE, some shortcomings in the overall organisation of CEPS became apparent during the evaluation process. GEODE is a relatively young research unit. Its positive development in the last few years now needs to be supported by the management of CEPS. The expert team therefore makes the following two recommendations to the management of CEPS.

Recommendation 5: Develop a research vision for CEPS

The transition of CEPS from a pure service unit towards an institution that combines services with research must necessarily be based on an appropriate scientific vision of its future development. CEPS should, in effect, situate itself more clearly within the European and Luxembourg research "landscape". A clearer research vision at the level of CEPS is expected to support the definition of a competitive research agenda for GEODE. This vision should highlight CEPS' specific scientific qualities and specialisations with regard to urban development issues that will affect Europe. The leader of CEPS should therefore work with the leaders of its units on a common research vision, including concrete scientific questions. In the experts' view, immediate action is needed, and a clearly formulated research vision should be established within the next two years. In the long term, scientific background and scientific competences will be needed within the leading management of CEPS and the management of all of its units.

Recommendation 6: Set up financial planning and make the distribution of the block grant within CEPS more transparent

More professionalism is clearly needed with respect to financial planning. Thus, CEPS' management needs to think about in what fields it wants to invest its resources and how the funds will be obtained. Of course, financial planning must be closely linked to the Centre's overall strategy and research vision.

Given the existing lack of transparency with regard to the distribution of the block grant within CEPS, the experts fully support the current efforts to soon establish rules for this. They are also of the opinion that the units composing CEPS could benefit from more independence in the management of their financial resources and the setting of priorities.

Of course, the distribution of funds within the Centre must be continuously evaluated with respect to the overall strategy. Given the positive development of GEODE and its contribution to bringing forward the institution's research activities, financial support should be assured, so as to allow the evaluation unit to consolidate its activities.

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PROJECT REFERENCE

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Project number: P11-10

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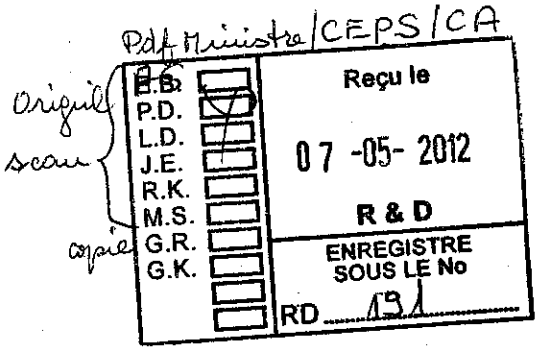

Monsieur le Ministre François Biltgen
Ministère de l'Enseignement supérieur et de la Recherche
18-20, Montée de la Pétrusse

L-2327 Luxembourg

Esch/Alzette, le 30 avril 2012

Objet : Prise de position du Conseil d'Administration du CEPS/INSTEAD concernant le rapport d'évaluation du Pôle Géographie et Développement (GEODE) réalisé par INTERFACE pour le compte du Ministère de l'Enseignement Supérieur et de la Recherche.

Monsieur le Ministre,

Conformément au courrier du 10 janvier 2012, nous vous transmettons la réponse soumise au CA du 9 février 2012 et validée au CA du 19 avril 2012. Il ressort de cette dernière réunion du CA que le CEPS va engager conjointement avec le MESR une étude stratégique pour définir les orientations futures du Centre. Les recommandations 4, 5 et 6 seront dès lors mises en œuvre selon la stratégie adoptée.

Concernant les recommandations du groupe d'experts le CEPS/INSTEAD les considère comme pertinentes mais souhaite apporter quelques correctifs issus des changements récents (qui se sont produits après la période d'évaluation 2008-2010) et de ses derniers travaux de recherche.

Recommandation 1 : interdisciplinarité des projets de recherche

Le Pôle GEODE développe actuellement un certain nombre de projets interdisciplinaires avec des partenaires institutionnels étrangers, plus particulièrement dans le domaine des comportements de mobilité et de la gouvernance transfrontalière, thématiques qui par elles-mêmes supposent l'implication de champs disciplinaires tels que les sciences politiques, les mathématiques ou la psychologie.

Recommandation 2 : recherche comparative au niveau européen

Le Pôle GEODE a entretemps développé des travaux comparatifs au niveau européen grâce à la participation à des projets européens (type FP7, COST).

Recommandation 3 : proposition de soutenir les chercheurs au niveau du management des ressources humaines

Le CEPS/INSTEAD a renforcé son soutien en matière de management des ressources humaines en procédant à l'engagement d'une responsable des ressources humaines dont la mission débute le 1er février 2012. L'engagement de cette ressource supplémentaire vient compléter le programme « Investment at All Levels » qui s'est déroulé en 2011. Ces deux éléments devraient désormais contribuer à soulager les Axes de recherche des soucis ressentis en matière de gestion des ressources humaines et de recrutement.

Une nouvelle définition des carrières, plus dynamique pour les chercheurs, sera adoptée en 2012. Celle-ci définit de façon très claire les exigences associées à l'accès à chaque grade. Dans cette grille, le grade de « Maître de recherche de niveau II » correspond à une position attractive pour des chercheurs de haut niveau. Par ailleurs, le Centre accorde – aux chercheurs qui en font la demande – l'autorisation d'assurer des cours dans des programmes universitaires (Bachelor, Maîtrise, Ecoles doctorales). Cette formule permet – à l'occasion – de renforcer les liens avec certains réseaux et de renforcer les compétences et la reconnaissance de nos chercheurs.

Recommandation 4 : Collaboration avec l'Université du Luxembourg

Dans la réalisation des projets de recherche CORE (FNR) le Pôle GEODE collabore principalement avec le département de Géographie de l'Université du Luxembourg et le laboratoire de recherche IPSE.
Une collaboration plus institutionnelle en matière de participation aux écoles doctorales créées par l'Université du Luxembourg est envisagée.

Recommandation 5 : Intégration des travaux du Pôle GEODE dans le programme du Centre et développement d'une vision stratégique pour le Centre.

- La construction du programme pluriannuel du Centre est élaborée avec l'ensemble des axes de recherche, tous représentés dans le Comité de Pilotage scientifique (CoPilots) (dont la coordination est d'ailleurs assurée par un chercheur du pôle GEODE).
- La vision de la politique scientifique du Centre a été définie dans deux documents (cf. Programme pluriannuel 2011-2013[1] et Programme pluriannuel 2011-2013 : Eléments stratégiques et scientifiques[2]) qui ont été élaborés en 2010 avec le concours de tous les chercheurs du Centre. Cette vision a été, en particulier, illustrée par une série de questions (cf. document de synthèse) visant à démontrer la cohérence de l'ensemble des projets menés au Centre et à préciser la manière dont chaque pôle de recherche s'intègre dans le programme pluriannuel du Centre.
- C'est dans cette perspective qu'un programme dédié à la « Cohésion sociale et territoriale » a été défini comme prioritaire pour la période 2011-2013. Ce programme prioritaire bénéficie des contributions de plus de 30 chercheurs, parmi lesquels le pôle GEODE est fortement représenté.

Recommandation 6 : Répartition des ressources financières fournies par la Convention du Ministère de tutelle

- L'objectif annoncé pour la période 2011-2013 était de permettre aux chercheurs de consacrer au moins 50% de leur temps à des travaux de recherche fondamentale et appliquée ainsi que de valorisation et ce, grâce au support des moyens mis à disposition par le Gouvernement à travers la convention **[Block Grant].**
- L'objectif est de redistribuer, selon une clé de répartition qui reste à définir, les moyens financiers alloués par le biais de la Convention, au niveau des pôles et axes de recherche.

Recevez, Monsieur le Ministre, l'expression de notre très haute considération.

Raymond WAGENER
Président

[1] Document Technique du CEPS/INSTEAD no 2010-19, « Programme Pluriannuel 2011-2013».
[2]Document Technique du CEPS/INSTEAD no 2010-28, « Programme Pluriannuel 2011-2013. Eléments stratégiques et scientifiques ».