

Report by the International Review Panel

Mariona COSTA
Irwin FELLER
Martin GRÖTSCHHEL (Chair)
Grit LAUDEL
Gunnar ÖQUIST
Oliviero STOCK

IMPACT EVALUATION 2013/14

W|W|T|F

Imprint

Wiener Wissenschafts-, Forschungs- und Technologiefonds WWTF
Vienna Science and Technology Fund
Schlickgasse 3/12, 1090 Wien/Vienna, Austria
T: +43 (0) 1 402 31 43
@ office@wwtf.at
<http://www.wwtf.at>
© WWTF 2014, Layout: WWTF

TABLE OF CONTENT

Executive Summary	5	IV. A View on the Program and Organizational Structure of WWTF	23
Kurzdarstellung	7	V. Recommendations	25
I. Introductory Remarks	9	VI. Appendices	26
II. Terms of Reference and Evaluation Approach	11		
III. Impact Analysis	13		
1. Impact on Research Careers	14		
2. Impact on the Establishment and Performance of Research Topics in Vienna	17		
3. Impact on Organizations that Host Research and Researchers	19		
4. Impact on the Broader Environment in which WWTF is Active	20		

EXECUTIVE SUMMARY

This report presents the findings and recommendations of an evaluation of the Vienna Science and Technology Fund (WWTF) by an international Review Panel. WWTF has been assessed following the objectives specified in the Panel's Terms of Reference requesting, in particular, to focus on the impacts on researchers' careers, on the performance of research topics, on communities and organizations, and on the overall performance within the Viennese and Austrian research system. The report is based on multiple sources of information, including:

- on-site interviews of seven groups totaling 35 individuals, comprised of senior administrators from leading research institutions, a cross-section of senior and junior researchers who had received WWTF-funding, and representatives from the City of Vienna;
- WWTF's *Self-Evaluation Report*;
- an in-depth study of WWTF impacts on career trajectories, also based on personal interviews, by Grit Laudel.

Strongly contributing to the Panel's confidence in its statement of findings and recommendations is that these independent sources of information converge on and are in accord on salient points.

Findings

- WWTF is small in size, its role in Vienna's university and research system is important, though. WWTF follows a well-chosen niche strategy and does this very effectively. Its activities provide perfect complements to those of other funding agencies.
- WWTF's philosophy to concentrate its funding on a few person-centered and project programs that strengthen existing strengths and fill thematic gaps, to focus on interdisciplinarity, and to operate via thematic calls is the key to its success. The themes are

well chosen, fit well into the Vienna research landscape, match the system wishes, but add also new directions to Vienna's existing research capabilities.

- A second key to success is WWTF's emphasis on rigorous, transparent, competitive, and international reviewing. Its evaluation and decision processes are considered by all interviewed participants as fair.
- Receiving a WWTF grant is viewed as an increase of reputation both for grantees and their hosting institutions. A WWTF grant is a very positive item on a researcher's CV and enhances the chances of grantees in subsequent recruitment processes.
- The WWTF-office works efficiently and smoothly, is flexible, moves fast, solves problems and provides real support to the funded researchers. It is praised for its support of the sciences. WWTF fosters cooperation alongside competition and interacts faithfully with the Viennese research organization.
- WWTF's interactions with the City of Vienna constitute a valuable service to the City. WWTF helps building firm bridges between Vienna's political and research sectors, linking academia and society.
- The relatively short time of existence of most of the funding programs and the relatively small numbers of projects and persons involved do not permit decisive statistical conclusions about long-term impacts of the WWTF activities on careers and on the other aspects proposed in the Terms of Reference to address. However, there are strong indications that the three basic programs (*Projects*, *Vienna Research Groups (VRG)* and *Science Chairs*) have significant positive impacts on the careers of researchers, the establishment and development of the research topics funded and on the hosting institutions as well. The impact is explained in the report, but the range is too broad and diverse to be faithfully summarized here in a few words. One small indicator should be mentioned, though. WWTF-funded researchers have obtained many scientific di-

stinctions. Especially notable is the high number of ERC-grants and of Wittgenstein and START awards obtained by WWTF grantees (after having received WWTF funding), a clear sign that the WWTF reviewing process worked well.

Recommendations

- WWTF's organizational structure should be maintained. No changes are necessary.
 - WWTF should retain its emphasis on research excellence, as determined by competitive solicitations reviewed by international panels.
 - WWTF should continue to emphasize interdisciplinary research thrusts.
 - The funding of the *Vienna Research Group* program awards should be made more flexible, adjusting the size of an award to the scientific area being funded (offers made by the program may not be internationally competitive).
 - Universities that host *VRG* projects need to be more proactive and flexible to ensure that the capacities built up by these projects do not get lost at the end of the WWTF funding period.
- Mindful of the expressed reservations of university representatives about the WWTF's *Science Chair* program (not because of bad experiences but rather due to fiscal and administrative hurdles), the Review Panel recommends that WWTF starts again the search for topics for *WWTF Science Chairs* and makes new calls in the near future.
 - WWTF should regularly review its selection of research thrusts lest the positive impacts and high degree of satisfaction expressed by all respondents with current priorities induce complacency. It is the experience of the Panel members that focusing for a very long term on only a few subjects yields various rigidities - both on the side of the funding agency as well as on the "customer side".

Finally

All Panel members agree that they have never before participated in an evaluation where the views of all involved parties on the institution to be reviewed were as positive as in this case. Congratulations to WWTF for achieving such a high degree of acceptance.

KURZDARSTELLUNG

Dieser Bericht ist die Zusammenfassung der Ergebnisse und Empfehlungen einer Evaluierung des Wiener Wissenschafts-, Forschungs- und Technologiefonds (WWTF) durch eine internationale Gutachterkommission. Die Kommission richtete ihr Augenmerk – den vorgegebenen „Terms of Reference“ folgend – insbesondere auf die Auswirkungen der WWTF-Tätigkeit auf den beruflichen Werdegang der geförderten Wissenschaftler, auf die weitere Entwicklung von Forschungsthemen, -gemeinschaften und -organisationen sowie auf den Einfluss auf die Wiener bzw. österreichische Forschungslandschaft insgesamt. Der Bericht basiert auf den folgenden Informationsquellen:

- Vor-Ort-Interviews von sieben Personengruppen, bestehend aus insgesamt 35 Repräsentanten führender Forschungsinstitutionen - daran waren hochrangige leitende Wissenschaftler, WWTF-geförderte Nachwuchswissenschaftler und Vertreter des Landes Wien beteiligt;
- Selbstevaluationsbericht des WWTF;
- der Studie von Grit Laudel zu Auswirkungen der WWTF-Förderung auf die Karriereentwicklung von Wissenschaftlern, die ebenfalls auf persönlichen Interviews basiert.

Diese voneinander unabhängigen Quellen haben in wichtigen Punkten Übereinstimmung gezeigt; dies hat das Vertrauen der Kommission in die eigenen Ergebnisse und Empfehlungen bestärkt.

Ergebnisse

- Der WWTF ist eine kleine Stiftung, spielt aber im Wiener Universitäts- und Forschungssystem eine bedeutende Rolle. Der WWTF verfolgt eine gut gewählte Nischenstrategie und tut dies sehr effektiv. Seine Aktivitäten sind eine perfekte Ergänzung zu denen anderer Fördereinrichtungen.
- Das Leitmotiv des WWTF, die Förderung auf einige wenige Personen- und Projekt-Programme zu konzentrieren, die vorhandene Stärken stärken und thematische Lücken schließen, Interdisziplinarität zu fordern und mit thematisch fokussierten Ausschreibungen zu operieren, ist der Schlüssel zu seinem Erfolg. Die Themen sind gut gewählt, passen gut in die Wiener Forschungslandschaft und entsprechen den Wünschen des Wissenschaftssystems. Sie tragen aber auch zu Neuausrichtungen der bestehenden Forschungskapazitäten in Wien bei.
- Ein zweiter Erfolgsschlüssel des WWTF ist das strenge, transparente, kompetitive und strikt internationale Begutachtungsverfahren. Die Evaluierungs- und Entscheidungsprozesse werden von allen Beteiligten als fair angesehen.
- Eine WWTF-Förderung erhöht die Reputation – sowohl der geförderten Personen als auch ihrer Institutionen. Eine WWTF-Förderung ist ein sehr positiver Punkt im Curriculum Vitae eines Forschers und verbessert seine Chancen in nachfolgenden Bewerbungsprozessen.
- Die WWTF-Geschäftsstelle arbeitet effizient und reibungslos, reagiert flexibel, löst Probleme umgehend, leistet den geförderten Wissenschaftlern echte Unterstützung und erhält für ihre Förderung der Wissenschaften hohe Wertschätzung. Der WWTF genießt das Vertrauen der Wiener Forschungsorganisationen und fördert Kooperation unter Wettbewerbsbedingungen.
- Durch seinen Dialog mit dem Land Wien ist der WWTF ein wertvoller Dienstleister für die Stadt. Der WWTF hilft, zwischen Politik und Wissenschaft Brücken zu schlagen und damit Academia und Gesellschaft in Wien zu verbinden.
- Da die meisten der Förderprogramme noch nicht allzu lange bestehen und die Anzahl der Projekte sowie die der darin wirkenden Personen nicht sehr groß ist,

ist es so gut wie unmöglich, statistische gesicherte Schlussfolgerungen bezüglich langfristiger Auswirkungen der WWTF-Aktivitäten auf die Berufswege und die weiteren in den Terms of Reference genannten Aspekte zu ziehen. Jedoch gibt es eindeutige Hinweise darauf, dass die drei Hauptprogramme (*Projektförderung, Vienna Research Groups for Young Investigators* und die *WWTF-Stiftungsprofessuren*) signifikant positive Auswirkungen auf die weiteren Karrieren der Forscher, auf die Etablierung und Entwicklung von Forschungsthemen sowie auf die beteiligten Institutionen haben. Diese Effekte (impacts) sind im Bericht ausführlich erläutert, sind aber so vielfältig und vielschichtig, dass sie hier nicht in einigen wenigen Worten angemessen zusammengefasst werden können. Ein Indikator sei jedoch erwähnt: WWTF-geförderte Wissenschaftler haben eine Vielzahl von akademischen Auszeichnungen erhalten. Besonders bemerkenswert ist, dass viele WWTF-geförderte Wissenschaftler nach ihrer WWTF-Förderung eine hohe Anzahl von ERC-Stipendien, Wittgenstein- bzw. START-Preisen erhielten. Das ist ein klares Zeichen dafür, dass die WWTF-Auswahlverfahren sehr gut funktionieren.

Empfehlungen

- Der WWTF sollte seine Organisationsstruktur beibehalten. Änderungen sind nicht notwendig.
- Der WWTF sollte seine Betonung von wissenschaftlicher Exzellenz, die durch die Bewertungsverfahren durch internationale Jurys gewährleistet wird, unbedingt beibehalten.
- Der WWTF sollte auch weiterhin auf die Interdisziplinarität der Forschung Wert legen.
- Die Ausstattung des Vienna-Research-Group-Programms sollte flexibler gestaltet und die Höhe der

Zuwendungen an das jeweilige Wissenschaftsgebiet angepasst werden (Angebote innerhalb dieses Programms sind möglicherweise international nicht wettbewerbsfähig).

- Universitäten, an denen VRG-Projekte angesiedelt sind, sollten initiativreicher und flexibler sein, um sicherzustellen, dass die durch diese Projekte entstandenen Kapazitäten am Ende einer WWTF-Förderperiode nicht verloren gehen.
- Eingedenk der durch die Universitätsvertreter (nicht aufgrund schlechter Erfahrungen, sondern vielmehr wegen finanzwirtschaftlicher und administrativer Hürden) ausgedrückten Vorbehalte gegenüber dem *WWTF-Stiftungsprofessur*-Programm, empfiehlt die Kommission dem WWTF, neue Themen für diese *Stiftungsprofessuren* zu suchen und in naher Zukunft auszuschreiben.
- Der WWTF sollte regelmäßig seine Forschungshauptrichtungen überprüfen, damit die positiven Effekte und das hohe Maß an Zufriedenheit bei allen Beteiligten mit den gegenwärtigen Prioritäten den Blick für aktuelle Entwicklungen nicht verstellen. Die Erfahrung der Mitglieder der Kommission zeigt, dass ein zu langes Festhalten an einigen wenigen Themen die Gefahr von Rigidität in sich birgt – sowohl aufseiten der Fördereinrichtung als auch aufseiten der Fördernehmer.

Zum Abschluss

Alle Kommissionsmitglieder haben noch nie zuvor an einer Evaluierung teilgenommen, bei der die Meinungen aller Beteiligten über die zu überprüfende Institution so übereinstimmend positiv waren wie im vorliegenden Fall. Wir gratulieren dem WWTF zu diesem hohen Maß an Akzeptanz.

1. INTRODUCTORY REMARKS

The Wiener Wissenschafts-, Forschungs- und Technologiefonds (Vienna Science and Technology Fund, WWTF) was created in 2001 and began its operations in 2002. The first grants were issued in 2003. Since its creation WWTF has been financed by “Stiftung zur Verwaltung von Anteilsrechten” (a banking foundation). Since 2008, it also has received additional funds from the City of Vienna for specific programs. The banking foundation grants about 7-8 million EUR per year, while the City of Vienna provides an annual support of about 4-5 million EUR. Altogether WWTF has supported Viennese research with more than 100 million EUR in the last ten years.

WWTF’s objectives are to fund high-quality research in Vienna, thereby strengthening the position of Vienna as a city of top-science and innovation. Briefly: the WWTF’s philosophy is to “strengthen strengths” and to fill gaps within strong fields in the Vienna research landscape.

WWTF has a lean organizational structure. It has a Board of Directors (Vorstand) consisting of six members. The Board of Directors defines WWTF’s overall strategy and has the final decision-making authority on funding guidelines, selection of thematic programs and approval of funding applications.

The second WWTF body is the Advisory Board (Kuratorium), which is composed of 25 members representing the six local scientific universities, the Viennese local parliament, social partners and the municipal administration. Its main task is to provide advice to the Board of Directors.

The daily work is done by the WWTF-office, which currently has 8 employees. It administers the funding programs and thoroughly prepares the decision-making processes of the WWTF-bodies. Its contributions, how-

ever, extend far beyond these activities. The WWTF-office, under its current leadership, serves as an important node in linking several key sectors of Vienna’s academic and academic-government research enterprise. It is, in particular, employed as an information source by the City of Vienna about the Viennese research system.

In 2008 WWTF underwent an evaluation of its funding instruments and funding mechanisms. A clear recommendation was given that WWTF should continue to focus on excellence and interdisciplinarity, its two main funding instruments - person-centered and project funding - and the thematic programs that it had developed. The 2008 International Review Panel suggested the establishment of an international advisory board to identify new possible funding areas. This proposal was not implemented. The current Review Panel agrees with the WWTF decision with respect to this recommendation.

The Terms of Reference for the current “Impact Analysis of the Vienna Science and Technology Fund WWTF 2013” for the International Review Panel can be found in Appendix 2 of this report. In contrast to the 2008 evaluation, the 2013 Review Panel was tasked to look at the quality of people and projects funded, the impact of WWTF funding on the careers of the researchers involved in WWTF-projects, the development of the associated groups and WWTF’s influence on the universities and research organizations in Vienna as well as on the broader environment in which it is active.

This 2013 external evaluation was done by an international Review Panel comprised of individuals with broad expertise in science, science policy as well as in recruitment management, economy and sociology of science. The members of the Panel are listed below:

Mariona Costa, MA, Barcelona, Spain
Irwin Feller, Prof., Pennsylvania, USA
Martin Grötschel, Prof., Berlin, Germany, (Chairman)
Grit Laudel, Dr., Berlin, Germany
Gunnar Öquist, Prof., Umeå, Sweden
Oliviero Stock, Prof., Trento, Italy

The following report is (mainly) based on three sources of information:

- *Self-Evaluation Report* by WWTF;
- *An in-depth case study of selected WWTF impacts* by Grit Laudel;
- on-site interviews of seven groups totaling 35 individuals, comprised of senior administrators from leading research institutions, a cross-section of senior and junior researchers who had received WWTF-funding, and representatives from the City of Vienna, see VI. Appendices, 1.

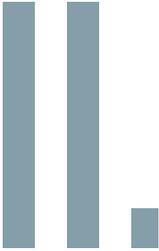
Moreover, the Panel studied various reports about research funding in Austria and research strategies and development plans of research institutions in Vienna.

The personal interviews provided an excellent opportunity to discuss issues in detail and directly challenge and cross-check statements. An especially striking outcome of these interviews, adding confidence to its own summative assessment, was that almost all interviewees agreed with the following statements:

- WWTF is needed in Vienna's university and research system.
- WWTF's activities provide important complements to those of other Austrian funding agencies.

- The WWTF selection of themes for its *Project* calls are carefully chosen and match the system wishes.
- WWTF makes sure that there is a critical mass of possible candidates before launching a call.
- The three basic programs they support, *Projects*, *VRG* and *Science Chairs*, have a great impact: the *Projects* because WWTF allows and promotes risky and interdisciplinary applications; *VRG* because it brings new and young talent from abroad into the system; *Science Chairs* because it allows universities to attract first-rate established researchers. All three support programs are much needed.
- WWTF procedures for evaluating applications for its three grant programs are transparent, thorough, and appropriately grounded in reviews by international peers. Consequently, WWTF's decisions on funding or not funding an application are viewed as fair.
- WWTF is flexible, moves fast, solves problems and provides real support to the researchers.
- WWTF fosters cooperation alongside competition.
- If WWTF were provided with additional funds, it should continue following its same strategies and practices.
- WWTF also gives good service to the City of Vienna and provides a very good link between academia and society.
- WWTF serves as a good facilitator and important intermediary in establishing working relationships between the research community and the political sector.

The Review Panel, by and large, agrees with the statements cited above. The sections below provide additional details on these assessments, along with further findings related to its evaluation.



TERMS OF REFERENCE AND EVALUATION APPROACH

On March 15, 2013 the WWTF Board of Directors decided to set up a Review Panel to evaluate the WWTF activities. The guidelines for the review were laid out in the “Terms of Reference” to be found in Appendix 2. The international Review Panel was formed in Spring 2013. It acted by email exchange, had a telephone-conference in November 2013 and conducted a site-visit to Vienna on December 2-3, 2013 when various “players” were interviewed (see VI. Appendices, 1). The groups of persons to be interviewed and the interviewees were selected by the Panel’s Chair based on proposals made by the WWTF-office.

In all stages of the evaluation process the Panel was supported by the WWTF-office. The WWTF-office provided a *Self-Evaluation Report* and *An in-depth case study of selected WWTF impacts*, a report commissioned by WWTF on March 1, 2013, and written by Grit Laudel. These reports provided detailed information about WWTF’s operations as well as insightful, contemporary findings about WWTF’s impacts on individual researchers and the Viennese research landscape.

The main question the WWTF Board of Directors asked in the Terms of Reference was:

“What are the impacts – in a very broad sense of the term – that WWTF has made?”

The Board of Directors requested further:

“The impact analysis 2013 shall focus on 6 different (but strongly interconnected) areas of action, namely impact on

1. researchers,
2. research,
3. research communities,
4. the establishment and performance of certain research topics in Vienna,
5. organisations that host research and researchers,
6. the broader environment in which WWTF is active.”

This report presents its findings with respect to each of these questions. It also calls attention to additional issues that emerged during the course of the interviews. Finally, it ventures forward to present its recommendations about WWTF’s future directions and activities.

The report of the International Review Panel of April 2008 “Enhancing WWTF’s Impact on the Viennese Research Landscape – Perspectives for the next five years” (see: http://www.wwtf.at/upload/ReviewPanel_2.pdf) focused on the success of the instruments and funding mechanisms of WWTF. The WWTF-office provided in its *Self-Evaluation Report* a detailed analysis of how the recommendations of the 2008 report have been implemented (see pp. 30-35). WWTF has implemented most of the suggestions. The current Panel agrees with the way WWTF handled the recommendations. The current report briefly discusses organizational matters, but mainly focuses on impact analysis.

IMPACT ANALYSIS

Although the Terms of Reference asked to review the impact on six “items”, the Review Panel decided to slightly regroup the questions and summarize its findings in four sub-chapters (III.1.-III.4.).

Before starting the impact analysis we briefly describe the funding programs of WWTF. WWTF distinguishes two types of funding.

Project Funding

The first type is *Project* funding which grants support for a specific project that has a clear aim and specifies approaches and resources that are necessary to achieve this aim. *Project* funding is only possible within a “call”. Such calls are issued from time to time with particular goals and/or thematic specifications. The funding period for grants ranges between 2-4 years, with budgets ranging between 200,000 to 1 million EUR, with an average of 500,000 EUR. This funding is higher than what can be obtained from comparable Austrian sources - e.g. the Austrian Science Fund (FWF) with a duration for stand-alone projects of 3 years and an annual average amount of 90,000 EUR - and includes a 20 % overhead rate for the hosting institution. Funding criteria are scientific excellence of the applicants as well as the innovativeness and quality of the proposed research.

To date, WWTF has issued calls in five different thematic areas: Life Sciences, Mathematics *and ...*, Social Sciences and Humanities, Information and Communication Technology, Cognitive Sciences (formerly Science for Creative Industries). These are described in detail (including issue time and periods of the calls) in the *Self-Evaluation Report* of WWTF, page 9 ff. To date, 27 *Project* calls have been made and more than 1,100 proposals submitted, of which 176 were funded. This leads to an average acceptance rate of 15.6 % of all proposals.

Person-centered Funding

The second type of funding is a person-centered program which grants financial support to a person for pursuing a somewhat broader, less specific aim. It includes funding for the position of the applicant. There are two lines within this program funding activity. The instrument *WWTF Science Chairs* aims at recruiting outstanding younger or already established researchers from abroad to Vienna. The position of the *Science Chair*, plus a small research group of Post-Docs and PhD-Students, recurrent costs and some initial investments can be funded for a period of 4-5 years with a maximum amount of 1.5 million EUR. This funding instrument also requires a strong commitment of the hosting institution (e.g. with respect to a sustained establishment and persistent funding of the newly started research lines).

The second person-centered funding instrument, established in 2010 as a result of the Innovation Strategy of the City of Vienna and financed by the City, is called *Vienna Research Groups for Young Investigators* (briefly *VRG*). This program targets researchers at an earlier stage of their career and aims at attracting promising young researchers from abroad to build up their own research group in Vienna. The host institutions are required to offer the group leader a long-term perspective in case of a positive evaluation. The maximum amount of funding is 1.5 million EUR for a period of 6-8 years. *VRG* leaders are offered a tenure-track position.

The scientific excellence of the candidate and the potential to embed the new research team into the existing environment of the host institution are the main selection criteria for *Science Chairs* and *VRG* groups.

In total, 8 *Science Chairs* have been funded by WWTF since 2004, whereas 7 *VRG* groups have been funded since 2010.

Quality Assurance

The core of the WWTF quality assurance measures are international peer-review and international jury processes. The 2008 Review Panel came in its analysis to the following conclusion: “The WWTF has set up a purely international peer-review process that is living up to highest international standards. It is a professionally safe and sound process.” The current Review Panel completely agrees.

The WWTF has implemented an online reporting system that includes past offline data and also provides a platform by which the funded persons report their outputs and outcomes. This system provides a unified data basis by which the results of WWTF-funded activities can be traced systematically. However, mid-term and long-term impacts cannot be assessed this way; the current report tries to investigate these impacts.

Competition and Collaboration

WWTF-funding is highly competitive, with low success rates (relative to those of other sources of external funding) and a resultant concentrated distribution of awards in a few institutions. The transparency of WWTF’s selection procedures and its emphasis on scientific merit, as vetted by international peers, has led to its reliance on competition to be widely accepted. Concurrently, its concentrated focus on a selected number of themes and interdisciplinary research has fostered cooperation among the researchers and institutions working on these themes.

I. Impact on Research Careers

Grit Laudel’s impact study provides under chapter 5. “Does WWTF funding have an impact on the recipients’ careers?” (see pp. 25-32) an extensive analysis of the various ways a grant can influence the academic career of a recipient and investigated, in particular, the impact that the WWTF grants had on the careers of the persons funded. In particular, Laudel’s study addresses the following dimensions of impact:

- providing a position,
- becoming independent,
- increased reputation,
- durability of career effects,
- gender issues.

She summarizes her findings on careers as follows:

WWTF promoted early career researchers and provided tenure-track positions (*VRG*), in some cases fixed-term positions (for *Project* grant holders). Additionally, mid-term careers were promoted by a small number of fixed-term professorships. With its in-built expectation for *VRG* grant and *Science Chair* applications that applicants have to come from outside Austria, they attracted researchers from abroad. This is also true for *Project* grant holders who came to Vienna after a postdoctoral phase abroad.

- Due to its good reputation, WWTF grants also have a symbolic value for grantees and that way very likely enhanced chances in subsequent recruitment processes. (However, this indirect effect is difficult to assess.)
- The effects on careers are likely to last for *Science Chairs*. For *VRG* leaders, the durability is still unclear

because none of them has finished their term yet. The selected researchers will likely get attractive offers from abroad, too. A concern is that *VRG* leaders will receive very little recurrent funding beyond their salaries. This is problematic in labor-intensive experimental sciences (such as biosciences).

Our own assessment activities confirm these findings. In addition, based on our interviews and readings of background material, we report the following:

All interviewees agreed that WWTF funding is highly regarded by all Viennese research institutions. This leads us to conclude that having received a WWTF grant as Principal Investigator (PI) or having worked in a WWTF funded *Project* as collaborator, can be viewed as a very positive item on a researcher's CV, and thus to an individual's long-term research career. In forming this conclusion, the Panel is mindful of the several methodological limitations to drawing conclusions from small samples and short time periods.

The number of *VRG* and *Science Chair* grants is too small for statistical meaningful analysis. Moreover, the WWTF programs are not running long enough to permit decisive statistical conclusions on the career effects of the researchers involved. In addition, it is difficult to attribute career progress solely to WWTF activities. These caveats aside, every indication is that receipt of a WWTF award contributes to an individual researcher's career, both because the funds it provides make possible more ambitious research agendas and for its halo effect.

There are two further aspects that need to be considered here. How do the institutions view the impact of the WWTF-funded persons, and how do they react with respect to making career decisions? How do funded researchers view the funding in terms of their own research career perspective?

The target group for *WWTF Science Chair* positions are researchers from abroad who already have international prominence. These grants are thus a mechanism to recruit to Austria, and specifically Vienna, individuals who will contribute to the performance and not incidentally the international reputation of Austrian science. In this sense, the selection for such a position is a big career step in itself, and the main issue is whether the selected persons do, in fact, fulfill the roles for which they have been chosen.

At the current stage, 8 *WWTF Science Chairs* have been filled. Those whose funding term ended are now tenured at their Austrian (Vienna) home institution; one *Science Chair* moved abroad. The role of the *WWTF Science Chairs* was discussed at length with several university representatives. All considered the choices made so far successful. In only one case discussions about a future appointment came up. This means that those persons who took the risk of accepting *WWTF Science Chairs* could use the program as a big step in their own scientific career.

Under the terms of the program, leaders of the *Vienna Research Groups* are appointed to tenure-track positions. No *VRG* grant has ended so far so that no conclusion about the impact upon recipient careers can be made. The members of these groups, the PIs and the members of all other *Project* groups are in a much more insecure position. The interviewed grantees judged the WWTF funding as "an extremely positive experience" and were "happy with the whole funding". According to the interviewees, WWTF makes life for the funded persons as easy as possible. All grantees reported that their projects would have been impossible without the WWTF funding. All also noted with considerable appreciation the flexibility and accommodations that WWTF had shown in response to requests for extension in the duration of a grant, in needed changes in collaborators,

and other adjustments that frequently occur during multi-year, multi-researcher projects. The grantees reported that, due to the WWTF funded projects, their citation numbers grew rapidly concerning amount and esteem, respectively. Despite these positive outcomes, some WWTF funded researchers noted that they faced uncertain career prospects in the light of the static number of tenure-track openings in Austrian universities and the challenges all Austrian researchers were confronting in securing public funding for their research.

Since the VRG funding line only started in 2010, conclusive statements on the career perspectives of VRG leaders and members cannot be made. The trend, though, is clear. Not only the universities but also the young researchers value the VRG funding line highly. It gives them the possibility of independent research early in their own career. It was important for the Review Panel to observe, that the VRG program also has a high international reputation. One of the interviewees had for his research project the offer for an DFG Emmy-Noether grant, too (a highly reputed young researcher funding program in Germany), but judged WWTF funding as a superior mode of support (better flexibility and the chance to get funding for equipment). Accordingly, the choice was made in favor of Vienna.

Asked what happens at the end of a WWTF *Project* grant, one of the interviewees replied “any planning of a career in Vienna is difficult”. The Panel’s remit did not extend to an assessment of the legal or administrative subtleties of academic appointments to Austria’s universities. The Panel is aware that due to financial restrictions of all research institutions in Vienna, any sizeable growth of academic positions cannot be expected at present. This macro-level environmental setting, though, clearly has significant impact on career related outcomes and impacts subsequent to the receipt and performance of a WWTF award. It is also clear that in the face of this systemwide environment, persons employed in the WWTF grant were willing to take the risks of a fixed-term em-

ployment since they saw more advantages than negative aspects for their scientific development and career.

In its *Self-Evaluation Report* WWTF has collected data concerning persons who worked in WWTF projects (see pp. 37 and 38). One observation was that about 50 % of the 33 persons who received a permanent associate or full professorship at a university went abroad. This may be viewed as an inability to keep excellent people in Vienna. However, the Panel views this as a natural development in the international transition of researchers. In the long run this will foster the international network of Austrian scientists and help stabilize Austria’s position in the international science landscape.

The *Self-Evaluation Report* also tells further success stories, in particular, the other grants given to WWTF-funded researchers. Especially notable is the high number of ERC-grants and of Wittgenstein and START awards obtained by WWTF grantees (see Tables 14 and 15, pp. 49-50). Many of these awards were received after the WWTF grant, but it is difficult to claim that this success is solely due to WWTF support. Nevertheless, it clearly indicates that WWTF selected excellent persons.

In her report Grit Laudel examined potential differences between male and female researchers in the use of grants, recognition received and reputation accrued for WWTF-funded research. No essential differences were found. One positive impact concerning women should be mentioned, though. Recipients of FWF Hertha Firnberg and Elise Richter grants (who receive very little financial support beyond their own salaries) were provided with funding for research projects.

A systematic career analysis for WWTF grantees is not possible in the absence of detailed career tracking data. Such data are very difficult to obtain and, thus, hardly any national science funding agency has made the effort.

2. Impact on the Establishment and Performance of Research Topics in Vienna

Concerning research topics, WWTF supported existing research lines continuing to emphasize priorities identified in earlier strategic plans and broadening them. Particularly notable is the start of completely new research lines that are risky and non-mainstream and for which funding is difficult to obtain (in general and in the Austrian funding landscape in particular). WWTF promoted interdisciplinary research – through its specific calls (containing thematic expectations and the expectation of interdisciplinary collaboration). New interdisciplinary connections occurred particularly in the program “Mathematics *and* ...”.

The research lines opened up by the *Science Chairs* will continue. Beyond that, some new research lines that started with WWTF funding are well established by now. But many of WWTF’s activities are still too recent to draw final conclusions. The mid- and long-term impact depends on the grantee’s future careers, research interests, and successful acquisition of external funding.

WWTF’s selection procedure for *Science Chairs* and *VRG* leaders strongly involves universities; therefore a very good fit of candidates with the local environment was achieved. This way existing fields were strengthened by adding a new area of expertise, and gaps in the academic research landscape were filled. Also new gaps in the Vienna landscape were revealed when WWTF grantees needed interdisciplinary collaborators.

An issue that was not clear to the Review Panel before its visit to Vienna was the question how WWTF selects

the subjects for the thematic programs. The members of the Review Panel were expecting significant controversies among the various players in Vienna concerning the definition of the subjects, the issuing of the calls and the like. However, it was an unexpected but pleasant surprise to find out that essentially everyone interviewed agreed both on the processes and procedures WWTF used to identify these themes, as well as the themes themselves.

This was clearly expressed in all interviews the Panel made. We quote some typical statements:

“The Mathematics *and* ... program is very successful.”

“WWTF complements other programs.”

“It funds small projects, but does the funding very well.”

“The first calls came in the right subject and just in the right time.”

“The WWTF programs have very nice collateral benefits.”

“They involve interdisciplinary collaboration which was new for Vienna, and created kind of a feeling for a scientific community: ‘We are the Viennese scientists.’”

“WWTF funding is an important ‘add-on’. For universities it is more important than many other funding programs.”

“WWTF is one place to go for when one wants something special.”

“WWTF’s activities attract interesting people to come to Vienna and do research here. This is what Vienna needs, and WWTF does the right thing here.”

“Our university has good experience with WWTF programs, they facilitate interdisciplinary aspects, WWTF complements FWF, and it is particularly addressing young researchers.”

“The funds are reasonably sized and are essential for much of our work.”

“WWTF clearly fills a gap. Its focus on scientific strength, well-chosen topics and programs and support for fundamental research is very much appreciated. Much of its success is based on the tough reviewing process. We see the grants as very prestigious.”

“WWTF is well placed in helping create a critical mass and in helping young researchers, but WWTF cannot solve the ‘university problems’.”

After having received such positive remarks about the work of WWTF and about the view of the impact on research in Vienna, the Review Panel intensively discussed the topics WWTF is funding with all interviewees.

The two thematic programs most frequently and most positively mentioned were “Life Sciences” and “Mathematics *and ...*”. It was general consensus that the mathematics program changed mathematics in Vienna quite substantially. Ten years ago it was mainly pure mathematics, and now it is complemented by more applied, often interdisciplinary, research. All interviewees considered this program as very successful and viewed the WWTF funding as the main driver for change. All agreed that WWTF played a decisive role in redirecting the research in mathematics in Vienna, broadening the fields of activity and contributing, in particular, to a lot of interdisciplinary and applied mathematical work. It indirectly also changed the recruitment policy of Viennese universities. Short-term WWTF projects in this way may have long-term effects on the research agenda.

Life Sciences have been a stronghold of research in Vienna for a long period of time and (compared with other scientific areas) are viewed as having been quite well funded. Nevertheless, all interviewees made clear that despite the relatively small amounts coming from WWTF, the projects it funded in the Life Sciences played important roles. As stated in the Laudel report: “Many collaborations in the Life Sciences that were triggered by WWTF funding were continued beyond the funded projects. In these fields, in which lines of research consist of sequences of projects requiring similar combinations of expertise, WWTF funding helped researchers expanding

their collaboration network.” It was also emphasized that there is an enormous deficit in clinical investigations, and that WWTF fills a very important gap in this field. The impact on Life Sciences was particularly strong, for instance, on the Max F. Perutz Laboratories (MFPL), enabling it to successfully compete for one *Vienna Research Group* award and two *WWTF Science Chairs*. These new positions in turn introduced new research thrusts to life-science research in Vienna.

The views of our interviewees on the Information and Communication Technology (ICT) program was also very positive. It is not easy, though, to evaluate the research and performance of the projects since only one third of the funded projects have been finished. The general output, though, is significant and indicates a strong push in the publication activities, in particular, in internationally recognized journals.

The Social Sciences and Humanities (SSH) program is similarly new. Only one project has been finished by now, and, thus, it is too early to make any decisive conclusions. The existing statistics about the projects, though, show that the number of publications in international peer-reviewed journals has increased in the fields covered. The SSH program was the only one where disagreement was voiced about WWTF’s research priorities. One interviewee criticized the contents of the calls on the grounds that these had been “too mainstream”. Other interviewees in the same session, however, defended WWTF’s subject choice and argued that the topics addressed are well suited for the Viennese research environment.

The Panel had neither the resources nor the wish (because of the methodological reservations on the part of its members about the validity of several bibliometric techniques) to delve deeply in quantitative measures of the research output of WWTF grantees. Nevertheless, its scan of the publication output of a number of research *Projects*, *VRGs* and *Science Chairs* indicate, albeit with a few exceptions, quantitatively sizeable, field-adjusted levels of output.

3. Impact on Organizations that Host Research and Researchers

Since all major research organizations in Vienna are involved in designing the WWTF programs, it is to be expected that there is some impact of WWTF on the organizations themselves. All WWTF programs have been designed in order to fill certain gaps in strong research fields at the universities, while others strengthen already existing strengths. For example, the *Science Chair* and the *VRG* programs were designed in order to bring in foreign expertise, currently not available in Vienna, in order to establish certain research fields that are viewed as important for the Viennese research environment in the long run.

All research organizations interviewed agreed that WWTF funding did play the role it was designed for. The thematic programs strengthened and in some cases redirected the research activities at the institutions involved in ways supported by the organization's leaderships and, thus, the WWTF funding was considered as an important aspect in developing the research portfolio of the institutions. WWTF was also viewed, in general, as a funding instrument that plays a crucial role in enhancing the visibility of the science in Vienna and Vienna itself. A major topic mentioned by everyone was the aspect that the WWTF funding enables the universities to set up groups with people coming from outside who otherwise would not have considered moving to Vienna. In this sense, WWTF had a strong impact on the science strategies of the universities.

The Review Panel tried hard to challenge, in particular, the university representatives to come up with ideas for

enhancing the thematic programs by other subjects and to consider other ways of spending the funds available to WWTF. Although some of the interviewees came up with ad-hoc suggestions concerning potentially other interesting topics, there was general agreement that the current thematic programs are extremely well chosen and best suited for the Viennese research environment. According to some of the interviewees, other areas that might be of interest for the university leadership are currently not at an international strength that makes them suitable for thematic programs. Some others do not have a critical mass in Vienna.

Moreover, although the universities and other research institutions in Vienna view themselves underfunded, and would have excellent use for additional financial support, they believe that the funds spent by WWTF are well allocated and excellently serve the whole Viennese research community. In their view WWTF plays an excellent role in enhancing the research landscape.

The university leadership praised, in particular, the *VRG* program, which they consider as very important for the universities. According to their view, the *VRG* program fits perfectly into the existing legal structure and can be coordinated nicely with tenure-track offers at the universities.

The *VRG* leaders on the other hand, do not have such a totally positive view on their own perspectives. They do appreciate, as mentioned in III.2., the opportunity to perform independent research, have their own research groups, etc., but they have also addressed the insecurity of keeping their research groups and the related support together in the absence of clearly identifiable external funding. Although the universities claim that they take steps and make efforts, the "felt reality" does not provide the same impression.

The *VRG* program is definitely a driver for change in the universities, an even stronger driver are the *WWTF Science Chairs*. They have been selected in order to bring in foreign expertise and to enhance the Viennese research portfolio. Host organizations recruited Chairs in areas funded by WWTF. In some cases additional Chair recruitments were undertaken (e.g. evolutionary biology was further strengthened). As already indicated, this *Science Chair* program was an overall success.

In the context of this assessment the Review Panel was surprised to observe that, some university leaders, however, were not in favor of continuing this program and setting up new calls for *WWTF Science Chairs*. The reasons given were administrative in nature. For the universities it is extremely difficult to handle offers made by WWTF and embed them into their own hiring schemes. The Review Panel, on the other hand, has a different view. Universities and research structures tend to become rigid and need occasional “perturbations”. The Panel sees WWTF as a driver for such perturbations in the Viennese research landscape. With the relatively small amount of money available to WWTF, decisive changes across the breadth and depth of the Viennese (and, a fortiori, Austrian) landscape by or through WWTF’s funds and strategies cannot be made. It can and has served as a catalyst for change, however, indicating what is possible, thereby highlighting at times the specific barriers and obstacles to systemic change. The *Science Chairs*, if well selected in collaboration with all the institutions involved, for example, can have a strong and lasting impact both in terms of the selected specific fields but more generally about Austria’s capacity for further enhancement in its international standing as a home for world-class scientific research. This enhancement is already highly visible through the *Science Chairs* filled so far. For these reasons, the Review Panel recommends that WWTF continues its *Science Chair* program. It further recommends that WWTF begins to actively seek to expand the

program by identifying new ideas for existing or additional scientific fields that are underrepresented in Vienna, that fit into the Viennese landscape and for which candidates interested in coming to Vienna and strengthening its research environment exist.

A particularly strong point in the WWTF calls is the emphasis on interdisciplinary work. The Review Panel was told that interdisciplinary and application-oriented work was substantially underfunded and underrepresented in the Viennese research institutions and that WWTF has significantly contributed to a change in this respect. The WWTF is, in the eyes of the Research Panel, making the right steps in directing research in Vienna in this way.

4. Impact on the Broader Environment in which WWTF is Active

WWTF is, of course, not the only funding organization in Vienna and Austria. It is embedded in an environment such as the Austrian Science Fund (FWF), the Austrian Research Promotion Agency (FFG) and other funding organizations. European research funding, in particular, the European Research Council (ERC) have begun to play an important role.

There is little doubt that WWTF has found a particular niche and started innovative programs such as the *WWTF Science Chairs* and the *VRGs* which are meanwhile copied by other funding agencies. The *WWTF Project* grants provide, on the average, larger amounts of support than most other grants and allow more flexibility. The general quote heard from several of the interviewees was: “The positive role of WWTF cannot be overemphasized.” It

was apparent through our interviews that, by its design, WWTF has adopted funding programs that are particularly suited for the Viennese environment and created a feeling of competition and collaboration.

WWTF also plays a significant role in linking the academic Vienna to the administrative Vienna. The latter role was another real surprise for the Review Panel. The representatives of the City of Vienna mentioned that they have frequently utilized WWTF as an information source and an enabler of contacts to the Viennese university and research system. They indicated that the City of Vienna has no tradition in supporting research since university funding has been a federal priority. That is the reason why, in the past, no strong connections between the City government and the research sector had been built. The City representatives emphasized the help that they received from WWTF in providing these connections, understanding the basic needs of researchers and in providing expertise for science-related activities.

The WWTF-office is highly regarded by the City representatives, and this is probably also one of the reasons why the City of Vienna had decided to provide funding to WWTF in addition to the funds that are coming from the banking foundation. These are add-ons to the portfolio of WWTF that are very much appreciated by the Viennese researchers. In particular, the City of Vienna is funding the Social Sciences and Humanities program, the VRG program and a university infrastructure program. In addition, the City of Vienna has commissioned and financed reports by the WWTF-office providing expert advice on various science-related topics.

It appears to the Review Panel that WWTF is well grounded in the broader research and administrative environment in Vienna. The contacts to the research institutions are very close, which perhaps is not surprising. Its close ties to the City of Vienna and its role as an intermediary

and network hub between and among the City, its academic institutions, and other research performers and organizations, is distinctive and indeed truly impressive. In this sense, WWTF delivers much more to the City of Vienna and its research landscape than one should expect from a foundation.

One type of influence that always has to be addressed in reviews of support organizations is the impact on the local economy. In the case of WWTF, it is impossible to directly draw connections between WWTF activities and the labor market and business sector in Vienna. According to the *Self-Evaluation Report* of WWTF, ten patent applications have been made (mostly in the Life Sciences), three companies were founded (in the ICT domain) which have some association with WWTF-funded projects. The Review Panel is not able to give well-founded judgments of the societal implications of these activities. We should also mention at this point that representatives and observers of the Viennese innovation system (such as Technopolis, LISAVienna, Austrian Institute of Economic Research) positively judged the importance of WWTF within the RTI-Strategy of Vienna, expressing the view that WWTF has a significant role to play in Vienna's future economic and social development.

In preparing the WWTF evaluation the Review Panel had studied development plans such as the Entwicklungsplan 2013+ of the Vienna University of Technology, the University of Vienna 2015 Development Plan, and the booklet "Strategie 2020" by the Austrian Council to better understand the WWTF funding strategy. These development plans were themselves not a topic of discussion in the interviews, but served to highlight the concern expressed by several interviewees about the lack of a "Hochschulplan" for Austria. We just mention this fact, although, we do not see it as a task of the WWTF Review Panel to comment on this issue.

IV. A VIEW ON THE PROGRAM AND ORGANIZATIONAL STRUCTURE OF WWTF

There is not much more to say at this point. We only can repeat what has been stated before: All stakeholders completely agree that the program structure is well designed and perfectly fits the intentions. The focus is on excellence and interdisciplinarity. The thematic program areas and the *Project* calls are extremely well designed. This similarly holds true for the *WWTF Science Chairs* and for the *VRG* program which had been very helpful for the Viennese research landscape. All interviewees suggested maintaining the programs and their structures.

This also holds for the organizational structure of WWTF. WWTF, in principle and practice, has a streamlined organizational structure. There is a small and well-chosen “Vorstand” (Board of Directors) that represents the major stakeholders faithfully. History shows that the Board of Directors has made good decisions and there is no reason to doubt that this will continue. The Kuratorium (Advisory Board) seems somewhat large. The Review Panel, though, understands that, given the large number

of diverse units of the Vienna research landscape, it is necessary to have an advisory board of this size. This seems politically unavoidable, and the potential danger that a body of this size does not “deliver” is, according to the historical development, unfounded.

The WWTF-office itself seems to be appropriately sized. Most importantly, and impressively, in the Panel’s view, it consists of very dedicated employees who stand behind the mission of WWTF. The Review Panel has an extremely positive impression of the work done at WWTF – based not only on its own experience, but also on the reports received from the interviewees who all praised the efficiency and flexibility of the WWTF-office. These positive remarks particularly hold for the Managing Director, Michael Stampfer, who was praised by everyone for his broad scientific view, his leadership skills and understanding for the scientific and political environment. One interviewee said that the Managing Director is doing his job with what can be best described by “good taste”.

V. RECOMMENDATIONS

Based on the findings and assessments above, the Review Panel offers the following recommendations concerning the future work of WWTF.

1. The organizational structure of WWTF should be maintained. No changes are necessary.
2. This comment also holds for the WWTF-office. It works efficiently and smoothly and is praised for its support of the sciences.
3. WWTF's emphasis on the rigorous but fair international review process of all applications was frequently cited as a key to its success. WWTF is advised to keep these standards.
4. It was also common opinion of all interviewees that the emphasis on interdisciplinarity and excellence in research should be maintained. This is a signature aspect of WWTF.
5. The WWTF-office should continue its interactions with the Viennese municipality in order to better bridge the still existing gap between politics and science. WWTF can play a very good role in this respect.
6. Although the *Vienna Research Group* program is seen as a program that excellently fits the environment, there are a few details that might be considered. It may be reasonable to be more flexible with respect to the amount of WWTF funding, depending on the area funded. Otherwise it may be that offers made in the *VRG* program are not internationally competitive.
7. An advice to the universities involved: They should make sure that the capacities built up by the *VRG* projects will not get lost at the end of the WWTF funding period.
8. Although the *WWTF Science Chair* program was not top ranked in the view of the university leaderships (not due to bad experience, but because of various administrative hurdles), the Review Panel suggests to continue the *WWTF Science Chair* program. The Panel views WWTF not only as "just another funding agency", but as a (subtle) driver for change. The Panel knows how difficult it is for universities to redirect its research and to develop areas. The *Science Chair* program is a good means to slightly perturb the system; as current history shows. It has a significant impact on the development of new and active areas of research in Vienna. Thus, the recommendation is to start again the search for topics for *WWTF Science Chairs* and make new calls in the near future, despite some resistance on the side of the university administrations.
9. The thematic programs are well designed, and the subjects perfectly fit the current science landscape. Nevertheless, the Review Panel, in contrast to most of the interviewees, suggests that new funding areas be reviewed regularly in order to make sure that WWTF continues to serve its purpose. It is the experience of the Panel members that focusing for a very long term on only a few subjects yields various rigidities - both on the side of the funding agency as well as on the "customer side".

VI. APPENDICES

1. Table of Interviews and Interviewees

Interviews were carried out with the following persons:

1. Board of Directors

Heinz Engl (Prof., Rector of the University of Vienna)
Renée Schroeder (Prof., University of Vienna, MFPL)
Franz Zwickl (Foundation "AVZ")

2. Advisory Board

Christoph Dellago (Prof., University of Vienna, Physics)
Cornelia Kasper (Prof., University of Natural Resources and Life Sciences)
Arnold Schmidt (former FWF, em. Prof., Vienna University of Technology)
Karl Sigmund (former FWF, Prof., University of Vienna, Mathematics)
Susanne Weigelin-Schwiedrzik (Prof., Vice-Rector for Research, University of Vienna, Humanities)

3. WWTF-funded persons

Monika Dörfler (Dr., University of Vienna)
Jürgen Kleine-Vehn (Dr., University of Natural Resources and Life Sciences)
Georg Tauböck (Dr., Vienna University of Technology)

4. Representatives of Viennese research institutions in the thematic areas of WWTF-funding

Andrea Barta (Prof., Medical University of Vienna, Max. F. Perutz Laboratories)
Eva Blimlinger (Rector Academy of Fine Arts)
Otto Doblhoff-Dier (Prof., Vice-Rector University of Veterinary Medicine Vienna and member of the WWTF Advisory Board)
Michael Drmota (Prof., Vienna University of Technology, Dean of the Faculty of Mathematics and Geoinformation)
Ulrike Felt (Prof., University of Vienna, Vice-Dean for Research, Social Sciences)

Johannes Froehlich (Prof., Vice-Rector, Vienna University of Technology and member of the WWTF Advisory Board)

Harald Isemann (Managing Director, Research Institute of Molecular Pathology (IMP))

Gerald Steinhardt (Prof., Vienna University of Technology, Dean, Informatics)

Josef Glöbl (Prof., University of Natural Resources and Life Sciences, Vice-Rector for Research, newly appointed member of the WWTF Advisory Board)

Wolfgang Knoll (Prof., Austrian Institute of Technology (AIT), Managing Director)

Christine Mannhalter (Prof., Medical University of Vienna, FWF Vice-President)

Markus Müller (Prof., Medical University of Vienna, Vice Rector for Research)

Magnus Nordborg (Dr., Science Director, Gregor Mendel Institute of the Austrian Academy of Sciences)

Horst Seidler (Prof. em., University of Vienna, Dean of the Faculty of Life Sciences)

Georg Stingl (Prof., Medical University of Vienna, Head of Department of Dermatology)

5. Representatives of the City of Vienna

Daniela Brandtner (City of Vienna)
Klemens Himpele (City of Vienna, Head of Department of Work, Economy and Statistics)
Jutta Löffler (City of Vienna)
Thomas Madreiter (City of Vienna, Director of Planning)
Alexander Van der Bellen (Prof. em., City of Vienna, Commissioner for Universities and Research)

6. Representatives and observers of the Vienna innovation system

Barbara Good (Technopolis Vienna)
Peter Halwachs (Managing Director, LISAVienna)
Jürgen Janger (Austrian Institute of Economic Research (WIFO))

7. WWTF office

Michael Stampfer (Dr., Managing Director of WWTF)

2. Terms of Reference for the International Review Panel

WWTF in a few lines

WWTF as a private, non-profit fund to advance science and research in Vienna is active since 2002. It is financed by a banking foundation (“Stiftung zur Verwaltung von Anteilsrechten”) and, since more recent times, also manages programmes for the City of Vienna. Its main aim is to fund high quality research and researchers in Vienna and thus to strengthen Vienna as a City of science and innovation. Until 2012, WWTF supported Viennese research and researchers with more than Euro 100 million.

The organisational structure of WWTF consists of a Board of Directors (6 persons; main decisions of WWTF are made here), the Advisory Board (25 persons; advising role to the Board of Directors) and WWTF office (8 persons; administrative and operational management).

In 2003, WWTF launched its first call in the field of life sciences. Since then, around 25 calls have been organized resulting in more than 160 funded activities such as *Projects or professorships / group leader positions*. Current funding priorities of WWTF are Life Sciences (since 2003); interdisciplinary mathematics called “Mathematics *and ...*” (since 2004), Information and Communication Technology (since 2008), and Cognitive Science (since 2009, before that “SciENCE for creative industries”). Additionally, the City of Vienna sponsors a programme for the social sciences and humanities. These priorities reflect strong scientific areas in Vienna and are congruent with the Funds goal of strengthening already strong areas.

WWTF funding is organised around these thematic calls. WWTF has also a clear portfolio of main funding instruments: larger research projects for up to four years; endowed professorships, and research groups for young scientists up to 8 years of funding.

WWTF funds researchers at Viennese research institutions and in this context allows for a smaller part of funding being transferred outside Vienna for partnerships. WWTF does not fund profit-oriented enterprises and – while asking for “medium term perspectives” – does not base funding decisions on any commercial perspectives of the proposals.

WWTF aims at funding excellent and strong scientific research that is internationally competitive. Central cornerstones of quality assurance in each call are strictly international peer reviews and an internationally composed jury of high-level experts making funding recommendations to the WWTF boards.

Objectives and strategic framework of WWTF

WWTF pursues a set of objectives that are drawn from the strategic framework of the fund issued in 2002. The framework of goals and objectives has been developed further in the following years. The aim was to allow WWTF to strongly position itself as an actor in the Vienna (and wider) innovation system. An important landmark was set in 2008 with the evaluation of WWTF by an international Review Panel assessing the instruments of processes of WWTF. The central recommendation of the Review Panel’s report was that WWTF should keep its clear **focus on scientific excellence**. For the upcoming Impact Analysis 2013, the 2008 Review Panel report provides a clear direction by stating that WWTF should continue to focus on indicators for excellence and less on short term measurable results. The Impact Analysis 2013, thus, should therefore not be based solely on input/output indicators but rather on the quality

of people, career and group development, attraction of young talent and the development of targeted areas.

Key dimensions of the criteria by which WWTF is supposed to be assessed can be drawn from its statutes, strategy, guidelines, the 2008 evaluation and its activities. These are:

- The strengthening of top-class research in Vienna with special emphasis on long-term engagements and sustainability of research as well as on the international orientation and visibility of Viennese research
- The funding of excellent researchers with special emphasis on the careers of young researchers
- A contribution to the establishment of emerging and innovative research topics within strong areas in Vienna
- Increasing cooperation and networking between Vienna-based research
- Establishment of mid-term relevance of funded research as a consequence of excellence in research

Timetable

This preliminary time table has to be specified with the members of the Review Panel once they have been officially be nominated.

Spring 2013	Online Meeting 1 - Specification of mandate and deliverables
Mid Oct 2013	Delivery of WWTF self-report; case study
End Oct 2013	Online Meeting 2 - Set-up of the site visit
2-3 Dec 2013	Site-Visit Vienna
Q1 2014	Submission evaluation report
Q1/2 2014	Presentation to WWTF Board of Directors

Scope of activities, questions and method

WWTF intends to assess - within the given overall strategy of the fund - the **impacts which WWTF has made** on a range of dimensions associated with research and its context.

What are these "impacts" - in a very broad sense of the term - that WWTF has made? The Impact Analysis 2013 shall focus on six different (but strongly interconnected) areas of action, namely impact ...

1. on researchers
2. on research
3. on research communities
4. on the establishment and performance of certain research topics in Vienna
5. on organisations that host research and researchers
6. on the broader environment in which WWTF is active

Central questions associated with these areas of actions are:

1. Does WWTF have an impact on the careers of researchers which are funded by it? Is there a recognizable impact particularly on young and/or female researchers and their careers?
2. What is the attributable impact of WWTF on the scientific output (papers, awards, grants, citations) and (secondary) on potential economic output (patents, spin off, industry co-operations) of funded activities?
3. How do WWTF activities affect the development of research communities in Vienna? Does WWTF trigger increased networking and collaboration between researchers in Vienna?
4. Does WWTF contribute to the establishment and further development of certain research topics, fields and themes in Vienna?
5. How does WWTF impact research organisations in terms of careers development, establishment of topics and fields, etc.?

6. What changes in the wider context of WWTF activities (in particular in the Vienna context) could be attributed (as a rule not exclusively) to WWTF? How is WWTF funding related to activities of other research funding organisations in the funding landscape and how did/do these affect its own scope of action?

Cross-cutting questions

- How are these impacts to be assessed in international standards? Does WWTF have impacts on research/researchers/topics which are internationally competitive?
- What is a reasonable timescale for WWTF to trigger impacts?
- What can WWTF do to increase/maximize the impacts given the limited resources and the overall strategy of the fund?
- How successful is WWTF to position itself in the funding landscape and what is the significance of WWTF from the perspective of its target groups in terms of funding opportunities?

The Review Panel shall provide statements and answers to these questions and give recommendations.

A preparatory case study, commissioned by WWTF to Dr. Grit Laudel of Technical University Berlin, will cover in-depth particular dimensions of WWTF impacts on local scientific communities, career developments of funded researchers and the development of certain topics in Vienna. The study will include the programme priorities “Mathematics *and ...*”, and sections of the “Life Sciences” and “Information and Communication Technology” programmes. It covers both project and person-oriented programme funding of WWTF. This study will be provided to the Review Panel as a basis for their considerations.

Given the broad activities of WWTF in the last 10 years, the Impact Analysis 2013 shall put a certain focus on

particular areas of WWTF activities in order to be doable. These areas should have a reasonable duration to be able to assess an impact, WWTF should have a unique position in the funding landscape in order to attribute impacts and the programmes should have a central position in the WWTF funding portfolio.

Based on these reasons, the following areas shall be specifically important for the Impact Analysis:

- Life Sciences, particularly “Linking Research and Patients’ Needs”: Vienna has a long tradition of investing in Life Sciences through many sources of public and private money. However, funding translational research is a unique position of WWTF.
- Interdisciplinary mathematics in the programme “Mathematics *and ...*”
- Scientific foundation of information and communication technologies
- Social Sciences and Humanities
- Person-oriented funding, particularly the instrument of *Vienna Research Groups* as a means to allow for long-term development of careers of young researchers.

Panel composition

The Review Panel shall consist of dominantly international experts covering specific backgrounds and competences. (1) The panel shall include disciplinary backgrounds which match the areas of WWTF programme priorities to be evaluated. These are mathematics, the life sciences, information and communication technologies (computer sciences, etc.) and social sciences and humanities. (2) Members of the panel shall bring along competences / knowledge of academic environments, research funding, science/research policy, evaluation and of the WWTF (e.g. former jury member, former member of the 2008 Review Panel and alike). The Review Panel shall consist of 6 persons:

Mariona Costa, MA, Barcelona, Spain, Catalan Institution for Research and Advanced Studies (ICREA)

Prof. **Irwin Feller**, Dr., USA, Institute for Policy Research and Evaluation / The Pennsylvania State University

Prof. **Martin Grötschel**, Dr. Dr. h.c. mult., Berlin, Germany (Chairman), University of Technology Berlin / Zuse Institute Berlin

Dr. **Grit Laudel**, University of Technology Berlin

Prof. **Gunnar Öquist**, Umeå, Sweden, University of Umeå / The Royal Swedish Academy of Sciences

Dr. **Oliviero Stock**, Trento, Italy, IRST (Istituto per la Ricerca Scientifica e Tecnologica) Fondazione Bruno Kessler

Secretary of the Review Panel:

Susanne Mittenzwey, Berlin, Germany, Zuse Institute Berlin

The Panel will be led by a chair nominated formally by the WWTF Board of Directors. The chair is responsible for the coordination of the Panel members. WWTF office will support the chair administratively.

Roles

The Panel is independent in its approaches and activities. The mandate - in the form of these Terms of Reference - formally comes from WWTF Board of Directors, decided upon on March 15, 2013. The Panel reports to

the Board of Directors and also discusses results with the WWTF Advisory Board. WWTF office (besides its organisational tasks) is subject to the review and does not actively take part in the main sessions of the Panel.

Deliverables

The Panel shall deliver a written report to the WWTF Board of Directors. The report will be presented by the Chairman of the Panel to the Board, in a Board of Directors meeting in early 2014.

The written report by the Review Panel must include an executive summary of max. 2 pages.

The written report will be published.

Resources and logistics

WWTF office provides the background information needed and is responsible for logistics. The Review Panel can employ an external expert / consultant financed by WWTF to pre-prepare special information and act as a rapporteur. An extensive self-report of WWTF will inform the Review Panel members about WWTF in its organisational context including procedures, thematic focus, the output so far and its role in the relevant Innovation System. The Review Panel will be provided with the preparatory case study by Dr. Laudel (as mentioned above).

The lingua franca of all written communication and reports as well as meetings of the Review Panel is English.

W|W|T|F