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# **Sustainability and Perceived Impacts of Funding Programmes and Initiatives for Internationally Mobile Postdocs – Perceived Effects on Individuals, Institutions and Society.**

**An Exploratory Study.**

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## Changing landscape for the internationalisation of higher education and research

*“Until recently, internationalization of higher education was largely considered as an end in itself.(...) An international survey on the benefits of internationalisation suggests institutions are increasingly considering the benefits, not just to students (and postdoctoral fellows), but to universities and society more broadly.”*

Source: Marinoni et al., 2019.

*“Internationalization has been presented as a universal good, as if to create a cross-border, cross-cultural or global connection is to automatically trigger a flow of all-around benefits (...). The claim is made often enough about benefits to the common good ... but the claim has mostly been couched in very general terms.”*

Source: Marginson, 2019.



## The current state of research

- There is evidence for impacts of funding programmes for internationally mobile postdocs at the individual level, some at the institutional level but there is rare evidence at the societal level due to the lack of empirical studies.
- The effects of mobility grants for international study and research stays have not been investigated comprehensively so far.

Individual level	Institutional level	Societal level
Evaluation studies of funding programmes for internationally mobile postdocs have provided evidence for benefits on the individual level, i.e. “the most impact (...) is gained by award recipients themselves.”	However, measurement of mobility programmes’ impacts on the institutions that send and employ scholarship recipients is rare.	“Informants familiar with the scholarship schemes were universal in their belief that they are (...) generating positive national outcomes, such as human-capital expansion, political and economic reform, improved relations with host countries ...”

Source: Engberg, 2014, p. 59-60



# Outline of the research project



## Objective: Exploratory study on perceived impacts of funding programmes for internationally mobile postdoctoral researchers.

### Two foundations

- Volkswagen Foundation
- Alexander von Humboldt Foundation

### Three programme modes

- Incoming
- Outgoing
- Capacity-building

### Two target groups

- Fellows (alumnae / alumni)
- Hosts

### Levels of analysis

- Individual
- Working group
- Institutional – university and non-university research institutions (host and return)
- Societal – a) research system and b) societal life (politics, economy and culture), in Germany as well as in developing countries



## Number of alumni per foundation and funding programme / initiative

<b>Alexander von Humboldt Foundation: 2013 - 2017</b>	<b># alumni</b>
Humboldt Research Fellowships (HFS, incoming)	2,153
Sofja Kovalevskaja Award (SKP, incoming)	35
Feodor Lynen Research Fellowships (FLP, outgoing)	429
Georg Forster Research Fellowships (GFP, incoming/capacity building)	284
<b>Volkswagen Foundation: 2008 - 2018</b>	<b># alumni</b>
Post-doctoral Fellowships in the Humanities at Universities and Research Institutes in Germany (together with the Andrew W. Mellon Foundation) (incoming)	36
Post-doctoral Fellowships in the Humanities at Universities and Research Institutes in the U.S. and Canada (together with the Andrew W. Mellon Foundation) (outgoing)	54
Knowledge for Tomorrow – Cooperative Research Projects in Sub-Saharan Africa (neglected tropical diseases, humanities, social sciences, livelihood management, natural resources, and engineering) (capacity building)	74



## Research methodology: methods and tools

- Analysis of initiatives' / programmes' documentation and reconstruction of intervention logics for the respective funding programmes / initiatives,
- Literature research on selected topics (such as research team diversity and productivity, migrant scientists and international networks, career tracking of international postdocs, return migration),
- Two-stage online surveys of fellows / alumnae and alumni on impacts of funding and on their career paths,
- An online survey of hosts of incoming fellows at German universities and research institutions (only AvH),
- A bibliometric analysis, i.e. mapping of citing authors' institutional affiliations before and after funding (sample).



## Research methodology: methods and tools

- Neither an evaluation nor a comparison of the programmes or the foundations was intended.
- The aim of this study was to explore the broad range of impacts that a) postdoctoral researchers experienced due to individual funding for international long-term mobility they received, and b) the postdocs and their hosts perceived that the fellows' funding has had on the working group, institutions and society.





## Online survey of fellows – 1<sup>st</sup> round

- Timeline: February – April 2019
- Sampling plan: census survey (except for HFS – 20 per cent)
- Qualitative: Open questions on impacts of the fellowships at different levels

(Sample page)

### How has the host institution benefited from your stay in Germany?

Below are some examples to clarify what we mean by "benefited".

*"There was not much benefit, since the bureaucratic effort that my research stay entailed posed a great challenge for the host institution in Germany."*

*"My presence at the host institution also benefited others who were not directly involved with the research project."*

*"I was able to establish contacts between the host institution in Germany and leading academic institutions in my home country."*



## Online survey of fellows – 2<sup>nd</sup> round

- Timeline: July – August 2019
- Sampling plan: census survey
- Quantitative: Fellows were asked to report whether the impacts of the funding reported by the fellows in the 1<sup>st</sup> round of the survey occurred in their case.
- At the different levels, 19 – 43 items / impacts were listed in the questionnaire.

(Sample page)

### The host institution benefited from my stay in the following way:

Benefit occurred

The institution benefited from my industrial outreach activities (e.g. patents, licences).

Other projects at the institution benefited from my contribution.

•••

The institution did not benefit much because it had no interest in my experience from abroad and its application.



## Online survey of hosts (only AvH)

- Time window: July – August 2019
- Only hosts of incoming fellows in Germany
- Sampling plan: census survey
- Hosts were asked to report whether or not the impacts which were reported by the fellows themselves occurred in the case of their working group, institution and for the research system and/or other aspects of societal life.
- At the different levels, 19-38 items / impacts were listed in the questionnaire.
- It was possible to add further impacts.

(Sample page)

**The host institution benefited from the fellow's stay in Germany in the following way:**

Benefit occurred

The fellow helped internationalise teaching at the institution (e.g. organised a journal club, study group).

The institution did not benefit much because there was rather little interest in the fellow's experience and its application.

•••

The fellow strengthened a core activity at the institution.

**Other benefits that occurred for the host institution that were not mentioned in the list above:**



## Response rates for online surveys of fellows

Alexander von Humboldt Foundation	1 <sup>st</sup> round		2 <sup>nd</sup> round	
	#net <sup>c</sup>	Response rate	#net <sup>c</sup>	Response rate
Humboldt Research Fellowships (incoming)	418 <sup>a</sup>	48%	414 <sup>a</sup>	50%
			1,471 <sup>b</sup>	56%
Sofja Kovalevskaja Award (incoming)	33	46%	33	64%
Feodor Lynen Research Fellowships (outgoing)	386	57%	380	62%
Georg Forster Research Fellowships (incoming/capacity building)	266	66%	264	68%

<sup>a</sup> fellows sampled in 1<sup>st</sup> round (20% sampling fraction)

<sup>b</sup> fellows who were not in the sample in the 1<sup>st</sup> round

<sup>c</sup> population size minus those who were not reached (e.g. invalid email address)



## Response rate for the online survey of hosts

Alexander von Humboldt Foundation	#net	Response rate
Humboldt Research Fellowships (incoming)	1,944	42%
Sofja Kovalevskaja Award (incoming)		
Georg Forster Research Fellowships (incoming/capacity building)		

Number of hosted fellows:

- 50% of the hosts (survey participants) supervised only one fellow,
- 24% of the hosts supervised two fellows, and
- 23% of the hosts supervised three or more fellows.



# Results



## **1. General observations**

## **2. Results at the different levels of analysis**

- ### **3. Overarching findings:**
- internationalisation@home**
  - sustainability of cooperation**
  - brain drain**
- ### **4. In-depth analyses:**
- career development**
  - international visibility**



# General observations





## **Impacts at the different levels**

- The majority of impacts were reported at the individual level. As the levels become more distant from the fellow (the working group, the institution, the research system, society), a decreasing tendency to report impacts was observed. The exception to this is the Georg Forster Research Fellowship Programme. → Possibly an indication of strong perception of relevance of research in developing countries, emerging economies and transition states.

## **Negative impacts**

- They were (among) the least often mentioned impacts reported by the fellows and hosts at all levels.



# Results at the different levels of analysis



## Individual level

**In academic terms, the following personal impacts occurred in my case due to the research stay:**  
(N = 1,440 respondents, sorted in descending order by total per cent)

Impacts	HFS		FLP		GFP	
	Rank	%	Rank	%	Rank	%
The research stay meant a lot for my personal development.	<b>2</b>	75.2	<b>1</b>	83.5	<b>3</b>	77.7
I advanced my career in research.*	<b>1</b>	76.2	<b>3</b>	78.0	<b>4.5</b>	76.5
I increased my visibility in international research.**	<b>3</b>	74.9	<b>7.5</b>	76.3	<b>2</b>	78.2
I increased my independence as a researcher.	<b>4</b>	72.0	<b>9</b>	75.4	<b>10</b>	71.5
My reputation increased.	<b>5</b>	71.0	<b>4</b>	77.5	<b>8</b>	74.3

Notes: SKP was not included in the analysis due to a too small sample size.

The hosts were not included in the analysis because they were not asked this question in the questionnaire.

\* This topic will be presented in more detail on p. 29-32.

\*\* This topic will be presented in more detail on p. 33-36.



## Working group level

The working group benefited from my collaboration in the following way:

(N = 1,599 respondents, sorted in descending order by total per cent)

Impacts	HFS		GFP		Hosts	
	Rank	%	Rank	%	Rank	%
My / the fellow's cooperation with the working group (members of it) lasts until today.*	2	65.4	2	66.2	2	75.3
(PhD) students in the working group benefited from my / the fellow's advice.**	1	69.9	1	68.5	6	60.1
I / the fellow helped broaden the working group's research spectrum (e.g. topic, field).	4	57.8	3.5	58.5	3	74.2
The working group increased its publication performance.	6	45.4	6	52.3	4	73.4
I / the fellow introduced new techniques, methods, or theories to the working group.	3	58.4	3.5	58.5	8	55.9

Notes: SKP was not included in the analysis due to a too small sample size.

FLP was not included in the analysis because it is an outgoing programme and the working group was abroad (outside Germany).

The hosts were provided with the same items as the fellows but they were reformulated.

\* This topic will be presented in more detail on p. 26.

\*\* This topic will be presented in more detail on p. 25.



## Institutional level

The host institution in Germany benefited from my research stay in the following way:  
(N = 1,994 respondents, sorted in descending order by total per cent)

Impacts	HFS		GFP		Hosts	
	Rank	%	Rank	%	Rank	%
I / the fellow helped improve the institution's publication performance.	1	45.1	1	48.6	2	62.2
I / the fellow taught or advised (PhD) students at the institution.*	4	42.2	4	41.3	4	55.3
I / the fellow helped increase the institution's visibility.	5	36.3	5	40.2	1	67.1
The institution benefited from a continued collaboration with me / the fellow.**	3	42.6	2	46.9	3	57.2
I / the fellow encouraged other researchers at the institution to apply for international fellowships.*	2	44.3	3	41.9	9	33.7

Notes: SKP was not included in the analysis due to a too small sample size.

FLP is not included in this presentation because it is an outgoing programme and the host institution was abroad (outside Germany).

The hosts were provided with the same items as the fellows but they were reformulated.

\* This topic will be presented in more detail on p. 25.

\*\* This topic will be presented in more detail on p. 26.



## Societal level – research system in Germany

**My stay in Germany added value to the research system in Germany in the following way:**  
(N = 1,815 respondents, sorted in descending order by total per cent)

Impacts	HFS		Hosts	
	Rank	%	Rank	%
I / the fellow maintained my / his or her contact with Germany.*	<b>1</b>	79.8	<b>1</b>	84.1
I / the fellow raised awareness of research opportunities available in Germany.	<b>3</b>	52.3	<b>3</b>	52.0
I / the fellow informed German researchers about research systems of other countries.	<b>2</b>	52.4	<b>7</b>	39.4
The project increased the international visibility of research conducted in Germany.	<b>5</b>	39.0	<b>2</b>	59.9
The project strengthened international research networks of Germany.	<b>4</b>	42.3	<b>6</b>	45.8

Notes: SKP was not included in the analysis due to a too small sample size.

FLP is not included in this presentation because it is an outgoing programme.

GFP is not included in this presentation because the fellows were asked about added value for the research systems in the developing countries.

The hosts were provided with the same items as the fellows but they were reformulated.

\* This topic will be presented in more detail on p. 26.



## Societal level – other aspects of societal life in Germany

**My stay in Germany added value to other aspects of societal life in Germany, such as culture, politics, or economy in the following way:**

(N = 1,815 respondents, sorted in descending order by total per cent)

Impacts	HFS		Hosts	
	Rank	%	Rank	%
I / the fellow conveyed my / his or her favourable impressions of Germany to friends, colleagues or family.	1	74.2	1	64.8
I / the fellow recommended Germany as a tourist destination.	2	69.2	3	32.9
I / the fellow encouraged young researchers in my / his or her home country to learn German.	3	53.8	-	-
I / the fellow reached a position in academia where I / he or she can influence society.	5	22.0	2	34.9
The research project put me / the fellow in a position to support bilateral relations between my / his or her home country and Germany.	4	27.6	4	26.8

Notes: SKP was not included in the analysis due to a too small sample size.

FLP is not included in this presentation because it is an outgoing programme.

GFP is not included in this presentation because the fellows were asked about added value to society in the developing countries.

The hosts were provided with the same items as the fellows but they were reformulated.



# Overarching findings





## Internationalisation@home

- The incoming AvH fellows reported that (PhD) students in the working group (69-70%) or at the institution (41-42%) benefitted from their advice or teaching.
- Moreover, the group benefitted from the fellow's cultural perspective (53%) and the fellows encouraged other researchers at the institution to apply for international fellowships (42-44%).
- Furthermore, the fellow encouraged others in the working group to increase their international networking activities (40-43%).
- Finally, the fellows advised on proper use of the English language in the working group (23-32%).
- What was reported not often (12-13%) was the benefit of the fellow having contributed to the internationalisation of teaching (e.g. organised a journal club, study group).
- For all mentioned impacts, it holds true that the hosts viewed it as having occurred equally or less often than the fellows did.



## Sustainability of cooperation

- The most often observed at the societal level was the fact that the fellows maintained the contact with Germany (80-82%).
- The majority of the AvH fellows reported that their cooperation with the working group (members of it) lasts until today (65-66%).
- The continuation of the cooperation between the researchers and the institution was observed somewhat less often (37-47%).
- Still a considerable proportion reported to have hosted visits by researchers of the former host institution at the institution where they were engaged after the end of the funding (27-43%). Besides this, they perceived to have become a contact person for the institution searching for partners (17-25%).
- All in all, the results indicate a strong tendency for funded cooperation to last.



## Return to the home country / region → “brain drain”

- The majority of the outgoing Feodor Lynen fellows (73%) returned back to a university or a research institute in Germany immediately after the fellowship or later.
- The majority of the capacity building Georg Forster fellows (83%) returned to a university or a research institute in a developing country.

Anyway, whether the researchers remain in their former host countries or not, the countries benefit either way – directly or through former fellows as “bridge-heads”.



**In-depth analyses: - career development**

**- international visibility**



# Career development



## General observations

- Comparing the time points of the application, immediately after the fellowship and when the data was collected, the **careers of the fellows developed considerably**, both in terms of receiving an open-ended and full-time employment contract as well as in terms of advancing from the R2 (recognised researchers) over R3 (established researchers) to R4 (leading researchers) stage.
- This development was observed regardless of the baseline situation, though of course, where a considerable proportion of the fellows held an open-ended contract before the funding had begun (GFP fellows), the progression was less remarkable.



## Employment contract

What type of employment contract did / do you have within research when you submitted your application for fellowship / immediately after your fellowship ended / at the moment?  
(Percentage of those engaged in research for the answer “full-time and open ended”)

Alexander von Humboldt Foundation:	When applied for fellowship	At the end of fellowship	At the moment
Humboldt Research Fellowships – sampling fraction 1 <sup>st</sup> round + those who were not sampled in the 1 <sup>st</sup> round	38	53	66
Sofja Kovalevskaja Award	0	64	86
Feodor Lynen Research Fellowships	6	13	<b>28</b>
Georg Forster Research Fellowships	58	69	67



## Career stages

At which level were/are you active as a researcher when you submitted your grant application / after your funding ended / currently? (column percentages)

	Position	Application date	At the end of the fellowship	At the moment
<b>Humboldt Research Fellowships (incoming)</b>	R1	14	0	0
	R2	54	42	25
	R3	20	32	37
	R4	13	26	38
<b>Sofja Kovalevskaja Award (incoming)</b>	R2	93	7	0
	R3	7	33	13
	R4	0	60	87
<b>Feodor Lynen Fellowships (outgoing)</b>	R1	19	0	0
	R2	74	73	41
	R3	5	20	44
	R4	2	8	15
<b>Georg Forster Fellowships (incoming / capacity building)</b>	R1	5	0	0
	R2	45	29	21
	R3	28	32	27
	R4	23	39	52





# **International visibility**



## Mapping of citing authors' institutional affiliations

- Measuring the development of the international visibility of postdoctoral fellows over time by *citing authors' institutional affiliations*
- Selected researcher: Europe, Life Sciences, Humboldt fellow, funded between 2012 and 2013
- Publication search: authorised publication list (when applied) and SCOPUS-ID (2007-8/2019)
- Data base: addresses of correspondence authors, who cited the publications of the selected researcher (letter, review, article)
- Data cleaning: 816 citations (SCOPUS), for ~92% of the citations the locations could be identified (geo coordinates)
- 2 Figures: 1. Citing authors network for all publications until 2011 (when applied)  
2. Citing authors network for all publications from 2014 till 8/2019.
- The bibliometric analyses showed that a strong or a very strong increase in the number of citing institutions, as well as global and local expansion of citing authors' institutional affiliations were found.



## Mapping of citing authors' institutional affiliations for a selected AvH fellow

Institutional affiliation of authors who cited publications of the Humboldt fellow that he or she had published up to the beginning of the fellowship





## Mapping of citing authors' institutional affiliations for a selected AvH fellow

Institutional affiliation of authors who cited publications of the Humboldt fellow that he or she had published from the end of the fellowship until 2019





# Strategic considerations



## Research-oriented teaching and tutoring

- The majority of the incoming AvH fellows taught or advised (PhD) students in the working group (69-70%) and / or at the host institution in Germany (41-42%).
- Is internationalisation@home among the objectives the AvH would like to pursue? If yes, should future incoming fellows be encouraged to participate in teaching and tutoring of (PhD) students as well?



## Gender gap

- The majority of fellowships goes to male postdoctoral fellows. The majority of survey respondents (fellows and hosts) were men as well (HFS: 70%, SKP: 86%, FLP: 66%, GFP: 72%, Hosts: 80%).
- Is the AvH satisfied with the proportions of women among applicants, reviewers and hosts? Or, is there a need for a more proactive search for highly qualified women (i.e. applicants, reviewers, hosts)?



## Brain circulation

- The majority of the outgoing Feodor Lynen fellows (73%) returned back to a university or a research institute in Germany immediately after the fellowship or later.
  - The majority of the capacity building Georg Forster fellows (83%) returned to a university or a research institute in a developing country.
- How should brain gain or brain drain be assessed? How could the funding be designed to allow for more brain circulation?





# Suggestions for further research



## Integrated Employment Biographies Sample

An interesting question to explore:

**How long would former fellowship holders have to work in Germany until all costs incurred by the fellowship are amortized?**

- To learn more about the socio-economic impacts of fellowship programmes, it would be very interesting to examine the employment histories of former fellows in comparison to internationally non-mobile researchers in Germany using the Integrated Employment Biographies Sample\* (IEBS) of the Institute for Employment Research (IAB).
- With the help of IEBS, it is possible to trace employment biographies of employees subject to social security contributions – consisting of periods of employment, periods of unemployment, periods of job search, and participation in active labour market programmes.

\* [https://fdz.iab.de/en/FDZ\\_Individual\\_Data/Integrated\\_Employment\\_Biographies.aspx](https://fdz.iab.de/en/FDZ_Individual_Data/Integrated_Employment_Biographies.aspx)



## International visibility of alumnae and alumni

An interesting question to explore:

**How has the international visibility of alumnae and alumni developed over time?**

- A bibliometric analysis using the bibliographic data bases (e.g. WoS, Scopus) could be done to map the citing authors' institutional affiliations from the time of application until now.
- The CWTS offers such analyses for about € 400 to 480 per person based on algorithmically identified authors.



## Design of the funding programmes

### What are the levels where the funding is expected to yield results?

- At what levels does the AvH want to pursue objectives within a funding programme? Should the focus be just on the individual level, arguing that the individual funding is what is provided? Or, should the focus remain on the individual level but spill-over effects (to the working group, institution and society) should be considered as well? Or, does the AvH want to pursue goals at the individual, working group, institutional and societal level (research system and other aspects of societal life)? Are there overarching objectives that are not specific to a programme, but to which the programmes contribute together?
- For each level, where results are expected, the study suggests disentangling the logical chain of pursued changes into outputs, outcomes, programme-specific impacts and overarching impacts.
- Concrete proposals: 1. Design of intervention logics (ILs) for each funding programme, and  
2. Operationalisation of the ILs (indicators, target values, monitoring)
- Purpose: To improve the implementation and subsequent evaluation of the funding programmes.



**Thank you very much for your interest in the  
research project!**



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