

## Developing science-based policy advice

### Report - PhD Summer School 2019



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## 1 Background

This report reflects the main content as well as the presentations of the Summer-School 2019 on “Science-based policy advice”, organized by the Thünen Institute. The summer school took place at the Thünen Institute in Braunschweig from the 12<sup>th</sup> to 16<sup>th</sup> August 2019. The participants of the summer school were PhD stipends of the Federal Office for Agriculture and Food (BLE) from Africa and Iran. The Summer School 2019 was financed by the BLE.

During the summer school the following questions were examined:

- How does science-based policy advice work?
- How does it work in Germany?
- How can it be done in African countries and the Iran?
- What must be considered when writing science-based policy statements?

Aside some soft skills were trained such as:

- capacity to work in an interdisciplinary team
- capacity to work under time pressure
- increase intercultural competences
- practice of rhetorical skills

As one of the institutes under the mandate of the German Federal Ministry of Food and Agriculture (BMEL), the Thünen Institute is often requested to provide science-based policy advice for the ministry, for other governmental institutions, international bodies, NGOs, political parties and farmers unions. Since the institute works in rural areas, fishery and forestry, it can provide information on a large range of different topics and crosscutting areas.

The summer school lecturers are professionals in the field of giving policy advice based on scientific facts. They work as scientists in different Thünen departments, the Thünen overarching coordination unit climate and soil, at the National Meteorological Service of the Federal Republic of Germany (DWD) and also at the Federal Ministry of Food and Agriculture (BMEL). During an excursion to the fields and stables of the Thünen Institute of Organic Agriculture, the participants learnt how research questions are developed in the field and fed into policy advice to follow changes in the agricultural sector.

In the last days of the summer school program, participants developed their own policy statements based on a fictional policy request and presented them during a concluding simulated session with policy makers.

## Summer School 2019: Research-based Policy Advice, How does it work?

Thuenen Institute - Federal Research Institute for  
Rural Areas, Forestry and Fisheries



Bundesallee 50, 38116 Braunschweig, Germany

**12<sup>th</sup> August – 16<sup>th</sup> August 2019**

Summer School location: Forum Thünen Institute

<b>SUNDAY</b> Arrival		
<b>MONDAY August 12th</b>		
8:30 – 9:00	Arrival at Summer School and Reimbursement Procedure	selected participants
9:00 – 10:30	Introduction Participants get to know each other	Aida Gonzalez and Veronika Jorch
10:30 – 12:00	BMEL's perspective on Research-based Policy Advice	Andrea Rothe and Maja Clausen
12:00 – 13:00	Lunch	
13:00 – 14:30	Practical example of research-based policy advice: ex-ante market analysis with AGMEMOD	Aida Gonzalez
14:30 – 16:00	Some theory and practical lessons from 25 years of model-based policy advice by the Thünen Model Network	Frank Offermann
<i>Social Event</i>	<i>Evening Event for Participants</i>	
<b>TUESDAY August 13th</b>		
8:00 – 9:00	Reimbursement Procedure	selected participants
9:00 – 10:30	Practical example of research-based policy advice: - Greenhouse gases	Bernhard Osterburg
10:30 – 12:00	DWD, INKA Practical example of research-based policy advice: the case of climate impacts	Cathleen Frühauf
12:00 – 13:00	Lunch	
13:00 – 15:00	Introduction of the Summer School project Participants were divided into groups according to their PhD topics	Aida Gonzalez and Veronika Jorch
15:00 – 17:00	Summer School project	All participants

<b>WEDNESDAY August 14th</b>		
8:00 – 9:00	Reimbursement Procedure	selected participants
9:00 – 10:30	How to write policy advisory statements Practical examples	Claus Deblitz
10:30 – 11:00	Presentation of study: “Scientists studying abroad” by the Technical University of Braunschweig	Meike Faflik
11:00 - 12:30	Practical exercise: writing policy advisory statements	all
12:30 – 13:30	Lunch	all
13:30 – 16:00	Summer School project	all
<i>Social Event</i>	<i>Group dinner</i>	all
<b>THURSDAY August 15th</b> <i>Visit to Thünen Institute of Organic Farming in Trenthorst</i>		
8:30 – 11:00	Travel from Braunschweig to Trenthorst  Time to work on the Summer School project	all
11:00 – 12:30	Developing research questions in the field, feeding into politics – linking back to the field	Gerold Rahmann
12:30 – 13:30	Lunch	all
13:30 – 15:30	Visit to the experimental fields and stables in Trenthorst	Thuenen Institute of Organic Farming
15:30 – 19:00	Travel from Trenthorst to Braunschweig Time to work on the Summer School project	all
<b>FRIDAY August 16th</b>		
8:00 – 9:00	Reimbursement Procedure	selected participants
9:00 – 10:30	Time to work on the Summer School project	all
10:30 – 11:00	Coffee break	all
11:00 – 12:00	Presentations of Summer School Projects (Part 1)	all
12:00 – 13:00	Lunch	all
13:00 – 15:00	Presentations of Summer School Projects (Part 2)	all
15:00 – 15:30	Wrap-up	all
15:30 – 16:00	Concluding remarks of the Summer School	Aida Gonzalez and Veronika Jorch
<b>SATURDAY</b> Departure		

## 2 Introducing science-based policy advice - Monday 12<sup>th</sup> August

### 2.1 BMEL's perspective on Research-based Policy Advice

Lecturer: Dr. Maja Clausen (BMEL)

The BMEL research policy follows four research clusters:

1. Future of Rural Areas
  - High quality of life, strong economic sectors and efficient fostering
2. Sustainable Agriculture
  - Responsible and resource conserving soil management and animal husbandry
3. Healthy Life
  - Health, good nutrition and safe products
4. Global Responsibility
  - Ensuring global food security and responsible resource management
  - This responsibility has been transferred to federal research institutes

The Thünen Institute, is, as are the Friedrich Löffler Institute (FLI), Julius Kühn Institute (JKI), Max Rubner Institute (MRI) and the Federal Institute for Risk Assessment (BfR), federal research institutes under the mandate of the BMEL. They provide scientific input for the policy decisions, such as consumer protection policies and decisions in ad hoc crisis situations.

Internationally the BMEL federal research activities contribute to:

- Engagement in scientific exchange and progress
- Creation of enduring international alliances
- Contribution to capacity building

A core topic is the global food security and nutrition.

### 2.2 Some theory and practical lessons from 25 years of model-based policy advice by the Thünen Model Network

Lecturer: Dr. Frank Offermann (Thünen Institute of Farm Economics)

The presentation started with some theory on science based policy advice. There are different ways (or 'models') of how the two subsystems of science and politics interact. Habermas<sup>1</sup> developed the Technocratic, the Decisionistic and the Pragmatic model to describe these interactions.

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<sup>1</sup> Habermas, Jürgen (1971): Toward a Rational Society.

According to the *Technocratic model*, science provides recommendations on political goals and the measures necessary to reach these. This model is often criticized since it undermines democratically legitimized processes of political decisions. Value judgements remain hidden and the responsibility for actual outcome remains unclear. In practice, this approach is often observed when new (technically complex) policy issues arise, or in times of widespread distrust in the political establishment.

The *Decisionistic model* is characterised by stronger power of the decision makers. The policy-maker determines the objectives, researchers analyse how these can be reached and the policy makers implement the scientific recommendations. This model is criticized since the division of work between science and policy implicates that facts and value judgements, as well as means and ends, can be clearly separated. However, goals, and their potential conflicts and synergies are subject to constant re-evaluation in the light of intended and unintended outcomes, which requires a continuous dialogue between science and politics.

The third model, *the Pragmatic model*, explicitly includes the public as an important actor. The objectives and means are determined by discourse between researchers, policymakers and the public. The role of research is to provide input, but do not determine objectives or means. The pragmatic model has many variants (e.g., „co-production“, „deliberative“, „co-evolutionary“... ).

Edenhofer<sup>2</sup> has developed the "Pragmatic-Enlightened model" to describe science based policy advice. Following this model, goals are set coordinated between science and society. The corresponding policy objectives and their means are evaluated regarding the practical consequences. The policy objectives might need to be reviewed again in a later stage, when new knowledge on secondary effects, side effected or synergies appear<sup>3</sup>. Thus the process of policy making needs to be adaptive to new situations.

### **Systematic preconditions for science-based policy advice**

For successful science-based policy advice a few preconditions have to be in place. Some indispensable requirements for science-based policy advice between science and society are:

- Objectivity
- Transparency, Public information
- Distance (Independence)
- Plurality

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<sup>2</sup>Edenhofer, O. (2011): Modelle der wissenschaftlichen Politikberatung. Vortrag bei der Veranstaltung, 'Zur gesellschaftlichen Verantwortung von Wissenschaft am Beispiel der Klimawissenschaften', PIK und Humboldt-Viadrina School of Governance, 16. August 2011.

<sup>3</sup>Edenhofer, O. and Kowarsch, M. (2015): Cartography of pathways: A new model for environmental policy assessments. *Environmental Science and Policy* 51, pp. 56–64. Online: <http://dx.doi.org/10.1016/j.envsci.2015.03.017>



Objectivity is a basis for scientific policy advice. Objectivity in the sciences is above all a result of a meaningfully organized scientific process and less the consequence of the objectivity of the individual scientists<sup>4</sup>.

The transparency of the overall decision-making process is important, so that society can track and trust the arguments for and the decisions and policies made<sup>5</sup>. This entails that communication between scientists, policy makers and society during the process needs to be accessible and understandable for all.

Independence or a distance between policy and science is crucial. Lack of independence entails the risk that the advice loses its credibility and trustworthiness. This is a frequently discussed issue, since political bodies (such as BMEL in Germany) or companies announce scientific project calls, sometimes with specific topics as background. Moreover the institutes financed by federal ministries are often questioned about their independency. Institutes and scientists in general have to deal with this situation.

Science-based policy advice needs to be diverse and thus plural. This means that the advice needs to be given, depending on the topic, from different perspectives, based on scientific theories, methods and approaches. The plurality of advices from different disciplines and persons increases the confidence in the knowledge needed for decision making.

### **Lessons from 25 years of model-based policy advice**

The policy areas relevant to agriculture are subject to constant change. This has led to an increased demand from policy makers and scientists to quantify the consequences of policy changes in advance. To do so requires taking into account numerous interactions. Models help to reduce the complexity of the real world to the essential relationships, and thus contribute to a better understanding.

The Modelling Network of the Thünen Institute uses economic models for different decision levels (e.g., farm, regional or sector). MAGNET simulates developments and policies in the area of world economics in general as well as those of individual countries and regions. The AGMEMOD model deals with the important agricultural markets of the EU Member States as well as interactions between the agricultural and food sectors. RAUMIS presents adjustments of agricultural land use and production at the regional level. FARMIS uses a bottom-up approach to farms and farm groups for its farm modelling and includes a projection of the results at sectoral level.

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<sup>4</sup> Kirchgässner (2013): Zur Rolle der Ökonometrie in der wissenschaftlichen Politikberatung. Perspektiven der Wirtschaftspolitik 14(1–2): 3–30.

<sup>5</sup> Weingart, Peter (2008): Zur Aktualität von Leitlinien für ‚gute Praxis‘ wissenschaftlicher Politikberatung. In: Weingart P, Kielmansegg PG, Hüttl R, et al. Leitlinien Politikberatung. Berlin: Berlin-Brandenburgische Akademie der Wissenschaften. 11-17.

The joint application of the models facilitates the consistent consolidation of the different levels. The results of our model-based policy impact assessments support policy makers in identifying potential need for action, in developing negotiation positions, and in designing policy instruments.

The analysis of a particular question starts with a first consultation of the modelling team with representatives of the Federal Ministry. Here, relevant scenarios (e.g., the abolishment of the milk quota) and central assumptions (e.g., the future development of energy prices) are discussed. Depending on the complexity of the problem and the relevant interactions, it is decided which models are required for the analysis and if and how these need to be developed further. In the subsequent analysis, a coordinated, parallel and/or iterative use of the model follows. This facilitates the consolidation of important assumptions, an exchange of results between model, and the mutual monitoring and control of model results. This approach ensures a consistent overall result.

A central element of the work of the modelling network is the regular establishment of a so-called "baseline", that is a projection of expected developments in the agricultural sector under the framework of current (agricultural) policy. The Thünen Baseline is developed in close cooperation with experts German Ministry of Food and Agriculture; it serves as a reference scenario for policy impact assessments.

### 3 Practical examples of science-based policy advice - Tuesday 13<sup>th</sup> August

Science-based policy advice is done by all kinds of different fields of science. In the case of the Thünen Institute, frequently requested by the German government topics focus on questions related to natural resources. The scale can be national or global, depending on the topic. Topics at global level are generally related to international agricultural trade, greenhouse gases (GHG) and its impacts on climate. At the national level, the Coordination Unit Climate at Thünen, working mostly as contact point for questions regarding GHG's and inKA (interdisciplinary contact point Agrarmeteorologie), is the German collection point of three agricultural institutes for climate related topics in agriculture.

One example of a partnership focused on the establishment of a science-based policy advice structure with scientific partners in other countries is given by AGMEMOD. The activities under the umbrella of "AGMEMOD goes Africa" enhances regular training activities in African countries or with African scientists visiting Germany. The training activities focus on the market modelling approach AGMEMOD.

In the second day, three examples of policy advice were presented in three different research areas.

#### 3.1 The case of model-based policy advice with AGMEMOD

Lecturer: Dr. Aída González-Mellado (Thünen Institute of Market Analysis)

Characteristics of scientific policy advice with models:

- Prompt
- Independent
- Science-based
- Long-term and future oriented

Model supported policy consultations have a long tradition in the area of economic policy. They go back to the work of Tinbergen who in 1936 developed and used a general equilibrium model to work out projections for the economic development in the Netherlands, on the basis of which multi-annual business plans were prepared by the government.

Generally, model based policy advice involves three main actors: a research institution, the client and the general public. The research institution (e.g., private or public) is most often represented by a research institute based outside or inside a university, but could also be an in-house branch of the client's institution. The clients comprise politicians (e.g., political administration or actual policy makers) as well as stakeholders, whereas the general public stands for all other research outside the research institution. The relationship between these actors might be a one-time project, but could also be established on a continuous institutional basis. Within the phases of the

policy cycle (problem recognition, agenda setting, policy formulation, decision making, policy implementation, policy evaluation) different combinations of these institutions are possible that influence the interaction and the role models can play within the process. The interaction between the research institution and the general public is marked by an exchange of scientific information. On the one hand, scientific progress developed by the research institution for the prevailing project diffuses into academia. While the scientific progress of academics is, on the other hand, a rich source of knowledge needed for the successful completion of projects. Additionally, academic criticism in the form of scientific committees attached to the research institution, peer reviews of journals.

In the case of AGMEMOD Germany, the model is hosted by the Thünen Institute and is applied to answer questions on price developments for agricultural markets caused by market changes. (For further information see Annex 1)

### 3.2 The case of climate impacts

Lecturer: Dr. Cathleen Frühauf (National Meteorological Service of the Federal Republic of Germany, inKA)

Farmers and policy makers need to consider various fields of science when trying to grasp the complex nexus of weather - climate impacts on agriculture and forestry. Therefore, in 2018 a central contact point for federal agencies for interdisciplinary questions was founded by the National Meteorological Service of the Federal Republic of Germany (DWD), the Thünen Institute and Julius-Kuehn Institute. This interdisciplinary contact point Agrarmeteorology (inKA) is based at the agro metrological institute of the DWD.

The goal of inKA is to pool the expertise of the institutes, enhance the teamwork, and use synergy effects to avoid the duplication of work.

inKa is following a three-step approach:

1. Collection and storage of relevant data at one place, which permits to requests to be answered more quickly.
2. Answering interdisciplinary questions, in research and for policy makers.
3. Identification of interdisciplinary research needs, which are then fed into the political process.

The contact point is thus a tool to make interdisciplinary research and the connected policy advice for weather and climate-related agricultural issues faster and more effective.

### 3.3 The case of greenhouse gases

Lecturer: Dipl.-Ing. agr. Bernhard Osterburg (Thünen Institute – Coordination Unit Climate and Soil)

The different departments of the Thünen Institute all work to some extent on topics related to greenhouse gases. The Thünen Institute of Climate-Smart Agriculture even focuses exclusively on measuring, reporting and reducing greenhouse gases in agriculture and land management.

Overall the institute is leading or involved in

- National emission reporting for agriculture and Land-use, Land-use change and forestry (LULUCF)
- Soil monitoring on organic and mineral soils
- Development and evaluation of mitigation measures
- Development and scenarios of future development pathways

Since 2012, the Thünen Institute has established the Coordinating Unit Climate, which is coordinating the policy advice on climate change mitigation, impact and adaptation of the institute. The coordination unit holds regular meetings with different departments which are directly involved in topics related to greenhouse gas. Moreover it is in direct contact to inKA.

The main client of the coordination unit is the Ministry of Food and Agriculture. The unit holds on a regular basis exchange meetings with the ministry. Other clients are the European Commission, the German Ministry of Environment, the Federal Environmental Agency and regional governments. The unit is also participating in governmental meetings and dialogue processes with public institutions and non-governmental organisations.

Based on the results of the different Thünen departments and further results by other institutes which are part of the Thünen network, the coordination unit publishes analysis and proposals on the EU common agricultural policy for the EU commission and for the German ministry. On national level the unit is directly involved to give advice for the national climate action plan and reduction targets.

## 4 How to write policy advisory statements - Wednesday 14<sup>th</sup> August

Lecturer: Dr. Claus Deblitz (Thünen Institute of Farm Economics)

The main goal of this presentation was to give a broad overview on which kind of policy advice the Thünen Institute provides. The examples come from the Thünen Institute of Farm Economics and might be handled slightly different in other specialised Institutes. However, they provide a valid guidance for the process. At the Thünen Institute, there is a straightforward pathway for requests on policy advice from the BMEL.

In the first step a department from the ministry requests policy advice for a specific case. This request enters the institute via the president (when more than one institute is involved) or director of the specialised institute (when only one institute is involved). It is then decided which specialised institutes and/or staff members are responsible for the specific request. The specific staff member(s) work(s) within the period given to provide the requested policy advice/position statement.

In specific circumstances the request comes from other customers (e.g., political parties or other ministries). In this case the request could reach the institute via email, telephone call or via post. The president of the Thünen Institute must be informed about this request.

The most important information for the scientist is the timeline and the required format of the output. Often, policy advice is requested on short notice, thus scientists giving policy advice need to be prepared to do so rapidly and ad-hoc as required. If no deadline is given in the first request, it can be worth to call the person who has sent the request and ask. The format for the policy advice can vary, written statements are the standard, but some prefer Power Point presentations.

Information on the target group for the policy advice is also relevant for the scientists giving advice. Such information indicates which language needs to be chosen and which previous knowledge is available on the issue and with the target audience. Avoiding acronyms, abbreviations and technical terms is always a good choice. When writing a policy statement it is wise to focus on what the target audience does not know and not on what the author knows. The message should be as short and concise as possible. The scientist giving advice should structure his/her statements in a written document, easily understandable and with a brief summary of each chapter. When possible, the advice should articulate different options, not only one single optimal solution. If there are scientific uncertainties, these should be communicated.

Policy advisers have to understand the policy making process. Policy makers will, in most cases, ask several institutions and consultants from other fields for advice. Policy decisions are not only a result of rational scientific results, but also the result of several discussions with different lobby groups.

## 5 Developing research questions on the field, feeding into politics and linking back to the field

The link to the farmers, fields and practical farm work is essential in science-based policy advice in agriculture. Policy advice will and should have influence on the farm work, thus everything advised should be an answer to current or future problems and issues out of real-life agriculture. It should also be proven to be doable. The final target group in agriculture, the farmers, must be a central component for policy advice; therefore scientists need to know the current and future problems in the agricultural sector with consideration of the farmers' decision-making processes.

The participants drove to Thünen Institute of Organic Agriculture in Trenthorst to get an overview on the applied agricultural research done by this Thünen specialised Institute. In Trenthorst the Thünen Institute owns 600 hectares of testing fields, managed in five different farming systems. This allows scientists to test innovations in farming under scientifically controlled circumstances directly in the field, meaning it is possible to test whether innovations are feasible and to make them practical, understandable, and tangible. Stakeholders visiting Trenthorst are often taken on a tour on a tractor to experience the real agricultural research on live. This is proven to be more effective than indoor presentations. Especially organic agricultural farms are complex system, with different components, such as fields, animal keeping on grasslands, forests etc. These systems are easier to understand for stakeholders if they can visit them. When the focus is on a single part of the system, the influences on or by it, impacts can be seen directly.

Some experiences on the field are shown in the following pictures.











## 6.1 "Lessons Learnt" from the summer school project

Some lessons learnt by the summer school project were collected during the summer school by the participants, others were observed by the organizers.

### **Preparation of the policy advice:**

The participants prepared a policy statement over the four days from the summer school. Each day participants had two hours per day allocated to work on the summer school project. This is a similar situation experienced in reality as scientists from Thünen Institute in most of the cases have to prepare statements and presentations for policy advice often parallel to the regular running research activities. Many policy advice requests are given the institutes without previous announcement and also have to be handled in the short term. The participants experienced that the timeframes for policy advice are quite short and tight. In contrast to medium-term research projects, a time extension for the submission of the policy statements can be hardly negotiated. The lack of time as an excuse for handing over a less comprehensive policy advice is not acceptable, since policy makers often need to find quick solutions. Thus, the own time management and group management is essential for good science-based policy advice.

One group received a publication on glyphosate usage for weed control close to water bodies with the request of giving further advisement on this specific study case. Politicians, environmental NGOs, farmers, the industry and the civil society discuss the usage of glyphosate very critically, since there had been studies indicating that herbicides containing glyphosate can cause cancer. The task to prepare the policy statement for this case appeared to be especially difficult, since keeping objectivity can be challenging when topics are hotly discussed. The group decided to present only the clear facts mentioned in the respective publication accompanied by information from other scientific journals. The most important part was to stay focused on the specific request, which helped them to stay neutral. Important was for the group to understand and know the exact objective of the requested policy advice as well as the preparation of the meeting to present their findings. This group managed to give a structured, generally understandable and at the same time fact-based presentation. Even though, at the beginning of the project the team members believed to have one of the most challenging tasks.

### **Structure of the written policy advice:**

After all the presentations, some basic components to achieve a good policy statement were summarized by all the participants. A brief self-introduction and a short summary of the request is a good start. This is important, as in reality, additional ministry officers from departments different from the one requesting the advice, might be also invited or might receive the written policy statement. In the summer school, this situation a similar atmosphere has been simulated, as each group had been working only on their presentation and did not know exactly the details from the other projects. Additionally, colleagues of the Thünen institute were invited to play the ministry

officers. Those colleagues had not read the request and got lost in presentations without a clear introduction.

All participants and organizers pointed out that statements need to be concrete, short and precise. This was experienced as difficult, since scientific results often require lots of background information, which cannot be summarised in short form. Those groups who managed to leave aside too many background information and focused on the topic, rather than giving additional advice, were perceived as the most successful. Helpful as well is to avoid slides with lot of text, it helped more to have graphs and illustrations.

### **When presenting the policy advice:**

An important lesson learnt was also the way to approach policy makers. It is necessary to talk with the policy makers as colleagues. Even in the cases where the scientist might consider the policy request to be of minor importance or not well thought out. Policy advisors request support because they are not the scientific experts on the related field of science, but they are the ones who have the overview on the wider circumstances. This entails that scientists should behave professionally, know their public and avoid being arrogant. During the policy advisory exercise it was observed that very small details, such as knowing the names of the ministry officers sitting at the table is an important factor to consider.

A specific challenge for few participants seemed to be to not start being defensive when policy makers asked further questions during the exercise. The scientist has to give objective policy advice, thus explaining scientific findings, theories, he/she has to contribute to a broader knowledge for policy makers. Defending any personal point of view might affect the credibility of the scientist.

Participants mentioned as well that they have learnt that in some cases is required to talk openly. This involves also saying that the scope of knowledge in the specific research field is still not that advanced to answer the question(s). In some cases there is still some need for research on specific policy request or topic to reduce uncertainties. The scientist can only give advice based on the current state of knowledge. If those are simply too few or too scattered, this should be communicated. Same applies for uncertainties. If possible, the uncertainties should be quantified, such as in the Intergovernmental Panel for Climate Change IPCC summaries for policy makers<sup>6</sup>.

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<sup>6</sup> See also: [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15\\_SPM\\_version\\_report\\_LR.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf)

## 7 Summary

In August 2019, a five-day-summer school on science-based policy advice was held at the Thünen Institute in Braunschweig. The summer school introduced several theories of science-based policy advice, practical examples for science-based policy advice, as well as an exercise on how to write advisory statement. Additionally, an excursion to the fields and stables of the Thünen Institute of Organic Agriculture in Trenthorst was planned. The summer school had also an active part for the participants with a practical exercise of an advisory presentation of science-based policy advice.

The Thünen Institute, as a Federal Research Institute under the BMEL mandate, is responsible for giving science-based policy advice to the BMEL, but also to other ministries, international bodies, regional governments, NGO's, political parties and farmers unions. The institute provides research and collects data for greenhouse gas accounting in forestry and rural areas, for fishery inventories, agricultural trade, etc., on behalf of the BMEL. Those data are the subject of international negotiations such as the UNFCCC, on the EU fish catch quotas, and others.

Policy advice by the Thünen Institute is, when the requests are interdisciplinary such as those on greenhouse gases or climate change, coordinated by the specialized Coordination Unit Climate and Soil or inKA. The Coordination Unit Climate and Soil is based at Thünen Institute, collects the advice predominantly at the Thünen Institute and mainly focuses on greenhouse gases, whereas inKa is based at the Agrometeorological Institute of the DWD, focusses more on adaptation and coordinates advice by several federal research institutes. The advice coordination is required, since the ministries often request advice on short notice, within the running political processes. This is especially difficult when the requests are interdisciplinary.

For timely, accurate and successful advice, the communication with the client requesting advice is indispensable. The language chosen and the format depend on the needs and person sending the request. Thus it is advisable to know the requesters or simply ask them about their specific needs. Moreover the mutual trust between advisor and policy makers, same as for the policy makers to the advisor is important. Therefore the independence of the research and science-based policy advice has to exist. Another point of discussion was the objectivity of advice, which is a central point of science-based policy advice. Even if every person has a position, science-based policy advice needs to be based on evident numbers and clean research practices, which leads into the maximum of objectivity. Further the policy advisors should communicate uncertainties and different opinions, as far as they exist.

## Annex 1: Presentations

Introduction – Thünen Institute – Germany’s major research institution for the rational use of natural resources (Aída González-Mellado)

 THÜNEN

**Thünen Institute – Germany’s major research institution for the rational use of natural resources**

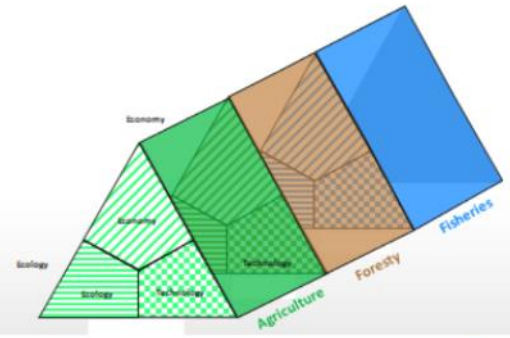
**Strategic and operational principles**




*Hermann von Scharnhorst*

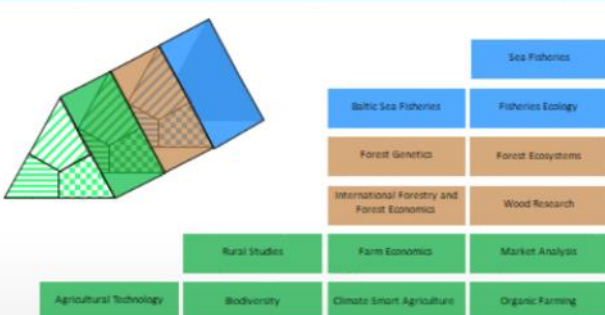
Braunschweig, 12<sup>th</sup> August, 2019

**Profile of Thünen Institute**




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**14 specialized institutes of Thünen Institute**

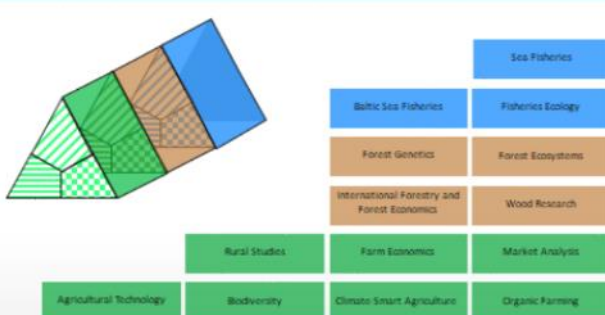


		Sea Fisheries	
Baltic Sea Fisheries		Fisheries Ecology	
Forest Genetics		Forest Ecosystems	
International Forestry and Forest Economics		Wood Research	
Rural Studies		Farm Economics	Market Analysis
Agricultural Technology	Biodiversity	Climate Smart Agriculture	Organic Farming


Our research & policy advice covers all farmed zones and landscape component:

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**14 specialized institutes of Thünen Institute**




		Sea Fisheries	
Baltic Sea Fisheries		Fisheries Ecology	
Forest Genetics		Forest Ecosystems	
International Forestry and Forest Economics		Wood Research	
Rural Studies		Farm Economics	Market Analysis
Agricultural Technology	Biodiversity	Climate Smart Agriculture	Organic Farming

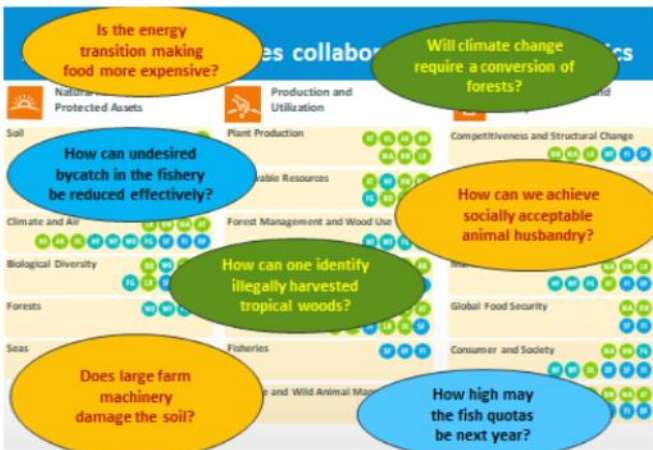
page 2 | 


**14 specialized institutes collaborate in 20 Thünen Topics**

Natural Resources and Protected Assets	Production and Utilization	Economy, Society and Policy
Soil: ●●●●●●●●●●	Plant Production: ●●●●●●●●●●	Competitiveness and Structural Change: ●●●●●●●●●●
Water: ●●●●●●●●●●	Renewable Resources: ●●●●●●●●●●	Income and Employment: ●●●●●●●●●●
Climate and Air: ●●●●●●●●●●	Forest Management and Wood Use: ●●●●●●●●●●	Rural Living Conditions: ●●●●●●●●●●
Biological Diversity: ●●●●●●●●●●	Organic Farming: ●●●●●●●●●●	Markets, Trade, Certification: ●●●●●●●●●●
Forests: ●●●●●●●●●●	Livestock Farming and Aquaculture: ●●●●●●●●●●	Global Food Security: ●●●●●●●●●●
Seas: ●●●●●●●●●●	Fisheries: ●●●●●●●●●●	Consumer and Society: ●●●●●●●●●●
	Land Use and Wild Animal Management: ●●●●●●●●●●	Long-term Policy Concepts: ●●●●●●●●●●

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**14 specialized institutes collaborate in 20 Thünen Topics**



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### Three main tasks of Thünen Institute:


- 1. Research and participation in free scientific competition**
  - Research of high societal relevance based on institutional budgets
  - Applying for third-party funds on national and international level
  - Collaborating in national and international research consortia



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- 1. Research and participation in free scientific competition**
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  - Applying for third-party funds on national and international level
  - Collaborating in national and international research consortia
- 2. Conducting national longterm monitorings**
  - National Forest Inventory, National Soil Surveys, Greenhouse Gas Inventories, Fish stock assessments etc.

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- 1. Research and participation in free scientific competition**
  - Research of high societal relevance based on institutional budgets
  - Applying for third-party funds on national and international level
  - Collaborating in national and international research consortia
- 2. Conducting national longterm monitorings**
  - National Forest Inventory, National Soil Surveys, Greenhouse Gas Inventories, Fish stock assessments etc.
- 3. Political consulting for German Government, EU etc.**
  - Preparing science-based reports, expert's opinions, options for action
  - Answering rapidly and highly skilled to urgent requests from politics
  - Representing Germany in international science & advisory boards





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### Cooperations – our international network

December 2018


Thünen scientists cooperate with 206 universities / higher schools and 509 further scientific organisations and companies in 82 countries.

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### Take-home-message: Five features of Thünen Institute


1. Broad range of **expertise** (economics, ecology, technologies)
2. Scientifically **independent**, close to **politics**
3. Embedded in **networks** (national / international)
4. Sizeable number of highly qualified **researchers**
5. Latest **methods** and first hand **data** to answer key future issues

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### PhD Summer School 2019

### Main objectives and outline



Braunschweig, 12<sup>th</sup> August, 2019

## PhD Summer School 2019 scientific based policy advise

### Why this topic?

New scientific novelties are spreading faster, the world is getting more interconnected. Future policies shall take complex developments into account, but how?

With scientific controversies, post-fact politics and societal challenges to the use of evidence in public policy, evidence-informed policymaking needs advocates and skilled practitioners, both in scientific and policy bodies.

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## PhD Summer School 2019 scientific based policy advise

### Objectives

Train future scientists on how to better integrate scientific evidence into policy-making;

Scientists will learn how to better communicate and visualise their results.

New insights on how 'the other side' operates;

Enlarged network of likeminded professionals, working on agricultural issues

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## Let's move!



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International Research Portfolio of the German Federal Ministry of Food and Agriculture (BMEL) (Maja Clausen)



**International Research Portfolio of the German Federal Ministry of Food and Agriculture (BMEL)**

PhD Summer School 2019, Thuenen Institute  
August 12, 2019

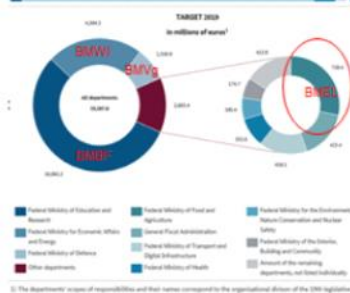
Maja Clausen, Division 121: Research & Innovation (International), Federal Ministry of Food and Agriculture (BMEL)



www.bmel.de

**Federal Government Expenditure Targets 2019 for Research and Development by Department**

Federal Government expenditure on research and development, by departments




The 4th largest R&D expenditure will be provided by the Federal Ministry of Food and Agriculture

-> target investment of 738,4 million €

-> 6,5 million € for international research (without EU)

22.08.2019 | Seite 2

**BMEL Research Policy: Four Research Clusters**



- Future of Rural Areas** - High quality of life, strong economic sectors and efficient fostering -
- Sustainable Agriculture** - Responsible and resource conserving soil management and animal husbandry -
- Healthy Life** - Health, good nutrition and safe products -
- Global Responsibility** - Ensuring global food security and responsible resource management -

22.08.2019 | Seite 3

**Agri-food research landscape in Germany**

Federal Government	Länder (federal states)	Private sector
Federal research establishments	Universities and polytechnics	Research centres of enterprises
	Federal state research establishments	Business-related R&D bodies
		German Federation of Industrial Research Associations (AIF)

Total: 38 of which BMEL 5

- Helmholtz Centres (HGF) (90:10)
- Leibniz Association (WGL) (50:50)
- Max Planck Society (MPG) (50:50)
- Fraunhofer Society (FHG) (90:10)
- German Research Foundation (DFG) (58:42)

WGL Total: 95  
BMEL co-finances: 8

22.08.2019 | Seite 4

**Federal Research Institutes within BMEL mandate**

- ❖ Friedrich Loeffler Institute (FLI): Animal Health
- ❖ Thünen Institute (TI): Rural Areas, Forestry and Fisheries
- ❖ Julius Kühn Institute (JKI): Cultivated Plants
- ❖ Max Rubner Institute (MRI): Nutrition and Food
- ❖ as well as:
- ❖ Federal Institute for Risk Assessment (BfR)




- ➡ Provide scientific input for policy decisions
- ➡ Contribute to international research projects & collaboration networks

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**Research Institutes affiliated with BMEL**

- ➔ Deutsches Biomasseforschungszentrum gGmbH (DBFZ)
- ➔ Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB)
- ➔ Leibniz Institute for Farm Animal Biology (FBN)
- ➔ Leibniz Institute of Vegetable and Ornamental Crops (IGZ)
- ➔ Leibniz Centre for Agricultural Landscape Research (ZALF)
- ➔ Leibniz Institute of Agricultural Development in Transition Economies (IAMO)
- ➔ Leibniz Institute for Food Systems Biology (LSB)



22.08.2019 | Seite 6

### German Agricultural Research Alliance

Umbrella organisation of German Agri-food research organisations > 60 members



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### BMEL Mandate & Core Competence in Food, Nutrition and Agricultural Policy (Part 1)

**International and EU:**

- Expertise and experience in the spectrum of **agriculture** (incl. fisheries), **rural development, food and nutrition**
- Long-term collaboration with **FAO** and its Committee for World Food Security (CFS)
- Involvement in **supranational formats**, including G7/G20, UN, OECD

**Key Milestones & Events:**

- Global Forum for Food and Agriculture, **GFFA** (annually in January, Berlin): international conference & stakeholder forum (GFFA 2020: 16-18 January)
- High level agri-food activities within **G20 context**: e.g. during GER Presidency 2017: hosting of Meeting of Agricultural Chief Scientists (G20 MACS; Nov. 2017); participation in last MACS in April 2019 hosted by Japan
- Participation in various **EU initiatives**: 3 Joint Programming Initiatives, 18 ERA-Nets, incl. ERA-Net Co-fund „LEAP-Agri“ (EU-Africa Partnership on food and nutrition security and sustainable Agriculture)

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### BMEL Mandate and Core Competence in Food, Nutrition and Agricultural Policy (Part 2)

**Coordination mechanisms at national level:**

- Strategy of the German Federal Government „Internationalization of Education, Science & Research“:
  - High-level Round Table, first cycle = focus on Africa; BMEL lead role in WG on Agriculture, Nutrition & Food Production)
- Close dialogue with the **German Agricultural Research alliance** („DAFA“, a network of all relevant German agricultural research institutions)
- Various other **multi-stakeholder formats & platforms** (e.g. on specific topics or with respect to individual countries/regions)

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### Multifaceted role of federal research: bridging science & policy




**Conducting (mostly applied) research**

- Expanding **scientific knowledge** for the benefit of the common good / general public
- Providing **research education & training**
- Contributing to & engaging in **national, EU and international research collaboration/ knowledge exchange** networks and initiatives (bi- & multilateral)

**Examination**

- Statutory tasks (e.g. Plant Protection Act, Animal Disease Act)



**Providing policy advice**

- Developing **scientific guidance** for agri-food and consumer protection policies (current examples: animal welfare, climate change, food labelling, digitalization etc.) and in adhoc crisis situations

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### BMEL International Research: Aims & Instruments

**Aims:**

- Engagement in scientific exchange and progress
- Creation of enduring international alliances
- Contribution to capacity building

**Funding Instruments:**

- Bilateral research collaboration** with selected partner countries. E.g. Joint projects with Japan; exchange of scientists with China and New Zealand
- PhD programme**  
Research partnerships training for PhD students from developing countries and emerging economies at German agri-food research facilities
  - PhD Programme Sub Sahara Africa: 3 years, approx. 0,8 Mio €, 8 PhD students
  - PhD Programme Iran: 3 years, approx. 0,8 Mio €, 8 PhD students
- Research Cooperation for Global Food Security and Nutrition**  
practice-oriented research projects, conducted in cooperation between German agri-food research facilities and corresponding facilities in selected developing countries and emerging economies

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### Research Cooperation for Global Food Security and Nutrition

(main funding instrument)



- 3 calls: 2013, 2016 and 2019 (published in July, still open)
- Since 2013: 20 international consortial projects approved
- Financial volume: approximately 20 Mio €

- Long-term** partnerships
- Involvement of **relevant partners** for sustainability (e.g. SMEs, NGOs)
- Identifying **local** solutions using competence of Germany's agriculture and nutrition research
- Knowledge and experience sharing for **capacity development**
- Contributing to **Sustainable Development Goals (SDG)**

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Contact details: *Maja Clausen, Division 121: Research & Innovation*  
(*Maja.Clausen@bmel.bund.de*)



Some theory - and practical lessons from 25 years of model-based policy advice by the Thünen Model Network (Frank Offermann)



**Research based policy advice**  
**Some theory - and practical lessons from 25 years of model-based policy advice by the Thünen Model Network**  
 Frank Offermann  
 Thünen-Institute of Farm Economics



PhD Summer School 2019  
 Braunschweig, August 12-16

*“Why don't you do as we say?”*

**Varför gör ni inte som vi säger?**

*Academy Gathering on Policy, Science and Social Media,  
 Royal Swedish Academy of Agriculture and Forestry,  
 Stockholm 2011*

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 12-16.8.2019 | PhD Summer School 2019



**Outline**


**Science based policy advice**

- Models of science based policy advice
- Basics, preconditions and challenges for successful science based policy advice

**Model based policy advice (The Thünen model network)**

- How can models support policy?
- Specific challenges of model based policy advice
  - Institutional setup
  - Organisation of processes and communication
  - Lessons learned

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**Models of science based policy advice**

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**Models of science based policy advice (Habermas) – Technocratic model**




Source: Based on Ederhofer (2011), Ederhofer and Kowarsch, 201

- Science provides recommendations on political goals and the necessary means/measures to reach these


**Criticism:**

- Model undermines democratically legitimized process of political decisions
- Many value judgements remain hidden; often, consensus is just pretended
- Responsibility for actual outcome remains unclear; actual outcome does not influence goal setting

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**Models of science based policy advice (Habermas) – Decisionistic model**




Source: Based on Ederhofer (2011), Ederhofer and Kowarsch, 201

- Assumption: Political goals are subject to (always subjective) value judgements, therefore politics has to somehow (decisionistic, subjective) decide on goals
- Science simply explore the means to these ends (goals)

**Criticism:**

- This 'division of work' between science and policy implies that facts and value judgements, as well as means and ends, can be clearly separated
- Goals, and their potential conflicts and synergies, are however subject to constant re-evaluation in the light of intended and unintended outcomes; this requires a continuous dialogue between science and politics.

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### Models of science based policy advice (Habermas) – Pragmatic model

Source: Based on Edenhofer (2011), Edenhofer and Kowisch, 2015

- Objectives and means are determined by discourse between researchers, policymakers and the public
- Research provide input, but do not determine objectives or means
- Pragmatic model has many variants: „co-production“, „deliberative“, „co-evolutionary“, ...

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### Models of science based policy advice – “pragmatic-enlightened” model (Edenhofer)

Science: Scope of options

- map alternative policy pathways, potential overlaps and trade-off;
- revise policy objectives if policy means have severe side-effects.
- foster learning processes about viable policy paths

Goals can be identified and justified only in the coordination process between science and society. Policy objectives and their means can only be evaluated in the light of the practical consequences of the means.

Source: Based on Edenhofer (2011, 2015)

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### Preconditions for successful science based policy advice

#### Organisation

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### Requirements (of science/society) for science-based policy advice (selection) (I)

- Objectivity
- Transparency, Public information
- Distance (Independence)
- Plurality

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### Requirements (of science/society) for science-based policy advice (selection) (II)

**Objectivity**

- Objectivity in the sciences is above all a result of a **meaningfully organized scientific process** and less the consequence of the objectivity of the individual scientists. (Kirchgässner, 2013)

**Transparency, Public information**

- Transparency of advice and decision-making processes ensures traceability of decisions and **confidence and trust in decision-making processes** as well as the arguments that inform them. (Weingart, 2008)
- In order for the consultants to have **incentives to make correct statements** in their opinions, the process of economic policy advice must be organized in an open and transparent manner. (Kirchgässner, 2013)
- Openness** secures equal access to all relevant information and is a **prerequisite of trust**. It refers both to the committees and their advisory processes as well as to the results. (Weingart, 2008)

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### Requirements for science-based policy advice (selection) (III)

**Distance (Independence)**

- Distance ensures **independence of advice**, i.e. the mutual independence of politics and science, so that there is no mixing of individual interests and scientific judgements. If independence of the advice is not maintained, it loses its credibility, its authority and legitimacy. (Weingart, 2008)

**Plurality**

- Plurality refers to the form and diversity of advice. Different disciplines and consultants, who are represented in the advisory process according to the topic, ensure the **variety of perspectives, scientific theories and methods**. Narrowing jeopardizes factual adequacy and confidence in knowledge. (Weingart, 2008)

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## Preconditions for successful science based policy advice

### The researcher

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## What makes agricultural economics research relevant for policy advice?

The key elements for researchers include

- doing high-quality work
- communicating effectively with the right audiences,
- and paying attention to **timeliness** and windows of opportunity
- understanding the policy-making process

Brink, 2012; Canadian Agricultural Economics Society

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## Demands (of policy / policymakers) to scientific policy advice (selection)

- must be prepared to provide **rapid ad-hoc input**
  - must learn to deliver **short and concise messages**
  - **avoid being arrogant**; do not alienate the policy makers / the public
  - should articulate **multiple policy options** rather than advocating a single „optimal“ solution
  - **communicate scientific uncertainties**
  - needs to have an improved **understanding of how policy making works**
- based on the "Conclusions of the High-Level Trans-Atlantic Science for Policy Workshop"

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## Model based policy advice

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## What is a model?

A model is a **simplified picture of complex reality.**

Example: Map

Required characteristics:

- simple
  - realistic
  - generalizable
- trade-off... "Everything should be made as simple as possible, but no simpler."

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## Model based policy advice

- Models help to **structure knowledge and understand reality**
- **Economic theory alone generally offers no conclusive answers** to questions about solving economic policy problems, especially in the case of conflicting income and substitution effects → **empirical analyses are indispensable** for the advisory process (Kirchgässner, 2013).
- Models facilitate the analysis of **hypothetical situations** (with/without; ex-post/ex-ante)
  - Models are a **research tool for policy relevant science**
- Experience from OECD and EU Commission (DGAgri): **Models help**
  - to „**depoliticise**“ debates
  - to **avoid simplistic answers**
  - to **overcome intra- and/or interministerial barriers**
  - Models are a **communication tool**

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## The Thünen Model Network



## Motivation

**Background:**

- Changing (economic) framework/conditions
- Issues in agricultural, energy and trade policies becoming increasingly complex




**Objective:**

- Support decision making of policy and society by providing ex-ante assessments of the impacts of potential policy changes

**Approach:** (Further) development, linkage, and use of models

- Reduce complexity of reality to essential relationships
- Assessment of the order of magnitude of potential policy impacts
  - for different groups/actors
  - for a broad spectrum of policy-relevant topics

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## The models

**Application of economic models which address different decision making levels (e.g. farm, regional, sector level)**

- MAGNET
- AGMEMOD
- CAPRI
- RAUMIS
- FARMIS
- TIPI-CAL und TYPICROP

➔ **The Thünen Model Network**


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## Methodology: The Thünen Modelling Network

Model	MAGNET	AGMEMOD	GAS EM	CAPRI	RAUMIS	FARMIS	TIPI-CAL/TYPICROP
Type of model	General equilibrium model	Partial equilibrium model	Modular spreadsheet model	Non linear programming models for regions/ farm groups		Expert based simulation models	
Aggregation level	World	EU	Germany	EU farm types	Country farms	Farm groups	Typical farms
Main focus for Thünen baseline	Agricultural trade	Prices and demand	Environment (gas emissions)	EU supply	Supply, environment	Income	Adjustment strategies


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## Methodology: The Thünen Modelling Network

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## Examples of research based policy advice by the Thünen Model Network

**Contributions to the development of the German negotiating position on the EU agricultural policy**

- Model results show to what extent the new options for a national design of direct payments proposed by the EU Commission can lead to competitive distortions between the EU member states

**Decision support for the national implementation of new agricultural policies**

- For the planned introduction of a national uniform premium in Germany, the extent of changes in farm incomes was estimated in advance and potential cases of hardship were identified.

**Identification of need for political action**

- Regular projection of the future development of the agricultural sector if current agricultural policy is maintained ("Thünen baseline"). Example: Compliance with the emission targets for ammonia requires further policy measures

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### Selected Studies

- 2002 Mid Term Review proposals
- 2003 Mid Term Review decision
- 2004 National implementation of the Luxembourg reform
- 2005 Sugar market reform
- 2006 Milk market reform
- 2008 Cereal market organisation  
CAP Health-Check
- 2009 WTO negotiations
- 2010 Free trade agreements
- 2011 Sugar market reform
- 2012 CAP after 2013
- 2014ff Free Trade Agreements (Mercosur; CETA; TTIP)
- 2017ff Brexit

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### 'Human capital' / institutional setting


**Thünen Institute:**

- Established 1995
- **12 researchers on permanent positions involved** (but often with only small share of total working time)
- + changing number of scientists on third-party funds
  - continuity of staff
  - continuous regular long-term maintenance of models
  - broad expertise

**Ministry:**

- single contact point (relative high continuity of staff)

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### 'Human capital' / institutional setting as a key factor for successful model based policy advice

**long term, continuous co-operation of model team and political administration**

- **mutual trust (confidentiality; publication) build up over the years**
- **mutual understanding**
  - administrative knowledge and communication skills of the modellers (identification of key questions; user-oriented presentation of results)
  - acceptance of model and research constraints
- **joint discussion of 'terms of reference' for new assignments**


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### Joint discussion of 'terms of reference' for new assignments as a key factor for successful model based policy consulting

- **Identification of key questions / results**
  - scientific community: impact on welfare, efficiency
  - policy makers: feasibility of reaching political consensus for potential policy alternatives
    - distributional aspects
    - financial viability (budgetary aspects)
    - implementation (feasibility)
    - negotiating positions of other EU member states
- **Joint discussion of assumptions and scenarios; consistent and accepted baseline scenario**
- **Appropriate and accepted mix of models (including incorporation of 'non-model' based analyses and expertise)**

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### Model based policy advice


**Specific challenges experienced by the Thünen Model Network**

- Establishing an accepted Reference Scenario - The Thünen Baseline
- Model linkages and communication of results

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### Model-based policy and technological impact analysis: The concept of the reference scenario



**base year** (circled in red)

**current situation**  
political, economic and environmental framework, market and farm structure, ...  
→ observed  
→ basis for model specification


**some time in the future** (dashed arrow)

**target year** (circled in red)

**reference scenario / baseline**  
projection of middle to long term developments  
• under current (agri-) political framework, and  
• specific assumptions with respect to general external developments

**(policy) scenario**  
Baseline, plus explicitly defined changes of external (policy) parameters

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### The Thünen-Baseline : Why and how do we do it?

- Existing baseline is **precondition for timely response** to requests from ministry
- Accepted baseline scenario is **precondition for effective and efficient policy consulting**

➤ Establishment and publication of a regular Thünen-Baseline



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### Steps in the process of establishing the Thünen Baseline

- Agreement on assumptions**  
Meeting with representatives from different departments of the Federal Agricultural Ministry to discuss and agree on assumptions for (Agricultural) Policy framework and the development of other exogenous variables (e.g. GDP, population, ...)  
➤ Inclusion of expert information  
➤ Increased acceptance ("co-produced reference scenario")
- Establishment of first results**
  - Model harmonisation
  - Exchange of model results as a basis for other models of the network
  - Contrasting and aligning model results to achieve consistency
- Presentation and discussion of first results**  
Meeting with representatives from different departments of the Federal Agricultural Ministry as well as representatives from the Länder ministries
- Establishment of final Baseline projection**  
Adjustment of models or interpretation of results, final Baseline results


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### The Thünen Baseline

- Agri-Economic projections for Germany**
  - Trade - bilateral
  - Prices – farm gate prices for many products
  - Demand – differentiated by use
  - Production - differentiated for many products, regions, farm groups
  - Land use - differentiated for many crops, regions, farm groups
  - Income – sector and farms; taking into account ownership of production factors
  - Environment – nutrient balances, gaseous emissions
- Medium-term (10-year) projection horizon**
- Business-as-usual-Scenario**
  - continuation of current agricultural policy and specific developments of external variables, e.g. trends)
- Established regularly every two years (2008, 2009, 2011, 2013, 2015, 2017), published with detailed annex**

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### Model based policy advice

#### Specific challenges experienced by the Thünen Model Network

- Establishing an accepted Reference Scenario - The Thünen Baseline
- Model linkages and communication of results


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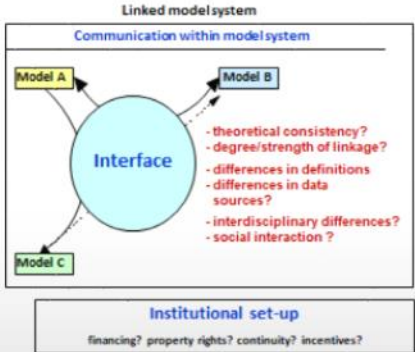
### Model linkage

- strong increase in development and application of linked model systems in agricultural domain
- driven by both demand and supply
  - complex challenges (far reaching policy reforms, climate change, food and/or energy, globalisation)
  - technical progress
- Abandonment of quest for 'single universal model'

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### How to link models ?



**Linked model system**


**Communication within model system**

- theoretical consistency?
- degree/strength of linkage?
- differences in definitions
- differences in data sources?
- interdisciplinary differences?
- social interaction ?

**Institutional set-up**

financing? property rights? continuity? incentives?

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### How to link models ?

**Linked model system**

Communication within model system

Model A, Model B, Model C, Interface

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- interdisciplinary differences?
- social interaction ?

**Institutional set-up**

financing? property rights? continuity? incentives?

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**Policy framework**

Linked model system

Communication within model system

Model A, Model B, Model C, Interface

- theoretical consistency?
- degree/strength of linkage?
- differences in definitions
- differences in data sources?
- interdisciplinary differences?
- social interaction ?

**Institutional set-up**

financing? property rights? continuity? incentives?

**Institutional framework**

**Black Box Problem**

Communication to the 'Rest of the World'

- Information, expertise
- Contribution to policy process?
- Consistency of results?
- Acceptance?
- Theoretical consistency?
- Scientific contribution?
- Iterations

Policy maker, administration  
Scientific community

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### Communication of model results for policy advice

- Communication of results must be tailored to target group
- results presentation should be results and not model oriented
- explain cause-effect relationships for non-modellers
- embed additional expert-based analyses
- underpin stability of results with sensitivity analyses
- If necessary, talk beforehand about
  - difference between various models and their results
  - developments of data bases and new extensions of modelsstructure
- **Attend carefully to divergent results**

Beckhede, Weitzel, Offermann

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### Do's and don'ts of presenting results

Don't	Do
<ul style="list-style-type: none"> <li>• sequential presentation of divergent results, e.g.,  <i>"Impacts on beef production:                      Model A: + 5 %                      Model B: + 10 %"</i> </li> <li>• present divergent results as if their reliability can be clearly ranked, e.g.,  <i>"... but model A likely underestimates impacts because of ..."</i> </li> </ul>	<ul style="list-style-type: none"> <li>• decide on comparative advantage of models</li> <li>• give ranges, e.g.,  <i>"Beef production rises by 5-10 % ..."</i> </li> <li>• convey message, e.g.,  <i>"sensitive area, impacts could be higher; monitoring is required; compensatory policy measure might be needed"</i> </li> </ul>

Beckhede, Weitzel, Offermann

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Practical example of research-based policy advice: Greenhouse gases (Bernhard Osterburg)



## Practical example of research-based policy advice: Greenhouse gases

Bernhard Osterburg  
Johann Heinrich von Thünen-Institute, Braunschweig, Coordination Unit Climate


Summer School 2019: Research-based Policy Advice, How does it work? 13. August 2019, Braunschweig



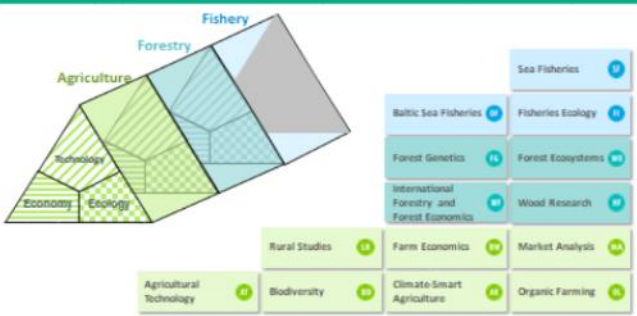
### Structure

1. Our activities in the field of climate change mitigation  
Thünen Institute and the Coordination Unit Climate
2. International Level: Climate negotiations, networking
3. EU level: Effort sharing and LULUCF regulation, Common Agricultural Policy
4. National level: Climate Action Plan 2050, mitigation options

Thanks to my colleagues at Thünen Institute, especially to Claudia Heidecke and Susanna Hönle

Seite 2 | Bernhard Osterburg  
13.08.2019 | Practical example of research-based policy advice: Greenhouse gases 

### 3 x 3 Structure, 14 Institutes, 1 Guiding Theme



**Solutions for the sustainable use of our natural resources!**  
*Scientific. Policy-oriented. Independent*

Seite 3 | Bernhard Osterburg  
13.08.2019 | Practical example of research-based policy advice: Greenhouse gases


### Challenge: Interdisciplinary Solutions in 20 Thematic Areas

Natural Resources	Production & Utilization	Economy, Society, Policy
<b>Soil</b>	<b>Plant Production</b>	<b>Competitiveness and Structural Change</b>
<b>Water</b>	<b>Renewable Resources</b>	<b>Income and Employment</b>
<b>Climate and Air</b>	<b>Forest Management and Wood Use</b>	<b>Rural Living Conditions</b>
<b>Biological Diversity</b>	<b>Organic Farming</b>	<b>Markets, Trade, Certification</b>
<b>Forests</b>	<b>Livestock Farming and Aquaculture</b>	<b>Global Food Security</b>
<b>Sea</b>	<b>Fisheries</b>	<b>Consumer and Society</b>
	<b>Land Use and Wild Animal Management</b>	<b>Long-term Policy Concepts</b>

Seite 4 | Bernhard Osterburg  
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### Research activities related to agriculture and climate change mitigation

- National emission reporting for agriculture and LULUCF
- Soil monitoring on organic and mineral soils
- Development and evaluation of mitigation measures
- Development and scenarios of future development pathways
- Organization of conferences and workshops
- Research based policy advice



Organic carbon stock in topsoil in Germany, BZE-LW, 2018

Seite 5 | Bernhard Osterburg  
13.08.2019 | Practical example of research-based policy advice: Greenhouse gases

### The „Coordination Unit Climate“

- Since 2012 (Bernhard Osterburg)
- Directly reporting to the Thünen president
- since 10/2017 with Claudia Heidecke
- Coordination of policy advice on climate change mitigation, impact and adaptation of the Thünen-Institute,
- Contributes to planning of research
- Closed and regular cooperation with specialised institutes (AK, BW, LR, AT, WO, HF, with others less regular)
- Activities at the interface of science, policy advice and support of the German Ministry of Food and Agriculture (esp. unit 521)



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### Activities of the coordination unit

- Main client: Ministry of Food and Agriculture, further: EU-COM, German Ministry of Environment, Federal Env. Agency, regional governments (Laender)
- Regular exchange with the Ministry unit 521 (each 3 months)
- Participation in governmental meetings and dialogue processes with public institutions and NGOs
- Elaboration of emission projections, assessment and evaluation of mitigation options, evaluation of new instruments (C pricing)
- Presentations at [organisation of] conferences and workshops
- Networking + own research projects as basis for policy advice



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### Climate change mitigation goals

**1,5 degree goal** = global GHG reduction by 40 to 70%, until 2050 (basis 2010)




**EU**  
... by 40% until 2030 (basis 1990)  
... by 80 to 95% until 2050

**Germany**  
... by 55% until 2030 (basis 1990)  
... by 80 to 95% until 2050  
... agriculture: by 31-34% until 2030

**Activities of Thünen-Institut**  
Analysis of negotiations, development of international networks

Analysis on CAP and GHG mitigation, role of land use,

GHG reporting (agric. + LULUCF), coherent proposals for the German climate policy, impact assessments input to expert report on climate policy of BMEL scientific advisory boards (2016)  
-> new research topics

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### Paris Agreement on Climate, December 2015 (COP 21)



- International binding agreement, 1,5° goal
- Replaces the Kyoto-Protocol and includes both industrialised and developing countries and emerging economies
- NDCs: Nationally determined contributions to GHG mitigation
- National reports to UNFCCC (Katowice Rulebook, COP 24)
- Global stocktake and raise of ambition every 5 years
- **What does that mean für agriculture?**
- „Koronivia“ joint work on agriculture, decision 4/CP.23

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### International networking

- Cooperation in the Global Research Alliance on Greenhouse Gas Emissions from Agriculture (GRA), CLIFF-GRADS Scholarship
- International Conference on Agricultural GHG Emissions and Food Security, September 2018, Berlin, with 300 participants



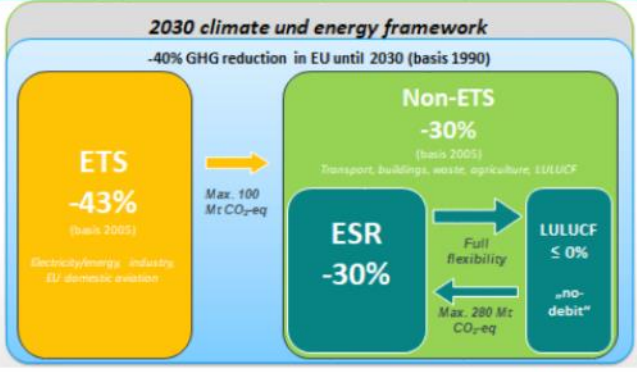
- FAO Knowledge Hub: CL (land climate) hub – advice & ideas
- ICOS: European Integrated Carbon Observation System Research Infrastructure (GHG fluxes), Thünen-AK coordinates ICOS-DE



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### Analysing proposals of the EU Commission, e.g. for the integration of LULUCF into EU climate policy


**2030 climate und energy framework**  
-40% GHG reduction in EU until 2030 (basis 1990)




Seite 11 | Source: Wehrheim, P., 2016. Proposal on Land Use, Land Use Change and Forestry (LULUCF Regulation), European Parliament, DG Climate, Presentation 29.08.2016. | THÜNEN

### Own analysis and proposals on the EU Common Agricultural Policy

... for the EU Commission,



... and for the German Ministry



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### The national level: Climate Action Plan 2050 – reduction targets for 2030

- Introduction of a „sectoral“ reduction target for agriculture
- Reduction by 11 - 14 Mt CO<sub>2</sub>-eq. p.a. by 2030 compared to 2014
- LULUCF sector is currently a net sink, which shall be safeguarded

Area of action	Reduction target until 2030 (basis: 1990)	State of reduction in 2014 (basis: 1990)
Energysector	61-62%	23%
Buildings	66-67%	43%
Transport	40-42%	2%
Industry	49-51%	36%
<b>Agriculture</b>	<b>31-34%</b>	<b>18%</b>
<b>Total</b>	<b>55%</b>	<b>28%</b>

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### GHG emissions of the German farm sector (ca. 111 Mio. t CO<sub>2</sub>-eq. p.a. = 12,5 % of total GHG; NIR 2017 for 2015)

Quelle: NIR, 2017-Berichterstatter, 2017 für 2015

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### Report on mitigation options (2013), report of scientific advisory boards (2016), impact assessment (2019)

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### Reduction of N surplus in agriculture = increasing N use efficiency

**EU**

- Effort sharing
- Renewable Energy Directive
- Air pollution (NEC-RL)
- Water protection (WFD, Nitrates Dir.)

**Germany**

- Climate action plan 2050
- German Sustainability strategy
- Immission control
- Regulation of fertilisation
- Biodiversity strategy

**Activities of Thünen-Institute**

- EU-Projects NUTRI2CYCLE (N/P/C-cycling), FAIRWAY (water quality)
- Joint project on GHG emissions from oil seed rape production
- GülleBest – Reduction of NH<sub>3</sub>- and GHG emissions from slurry
- Optimised climate farm II - project component on GHG
- AGRUM DE: Analysis on agricultural water protection
- Evaluation of the fertilisation ordinance, report on farm gate balance, measures on NH<sub>3</sub> reduction

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### Reports on fertiliser policies Fertilisation ordinance and Farm Gate Balance

**Evaluierung der Düngerverordnung – Ergebnisse und Optionen zur Weiterentwicklung**

Abschlussbericht

Bund-Länder-Arbeitsgruppe zur Evaluierung der Düngerverordnung

Bericht an Auftraggeber Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz

Berücksichtigung in November 2012

**Betriebliche Stoffstrombilanzen für Stickstoff und Phosphor - Berechnung und Bewertung**

Dokumentation der Ergebnisse der Bund-Länder-Arbeitsgruppe „Betriebliche Stoffstrombilanzen“ und der begleitenden Analysen des Thünen-Instituts

Thomas Pöppel, Bernhard Osterburg, Felix Thoenes, unter Mitarbeit der BMBL-AG Betriebliche Stoffstrombilanzen

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### Protection of organic soils and reduction of turf use

**EU**

- Integration of LULUCF into EU climate policy

**Germany**

- Climate action plan 2050: Bund-Länder-agreement protection of organic soils
- Coalition contract 2018: Strategie for protection of bogs and mires, reduction of turf use

**Aktivitäten des Thünen-Instituts**


- Joint project organic soils in emission reporting
- Protection of organic soils in DE
- Grassland on org. soils (SWAMPS)
- Climate Smart Agriculture on Organic Soils (CAOS)
- Monitoring of farmed organic soils (BEWAMO)
- Cultivation of sphagnum moss
- Reduction of turf use: LCA and economic analysis
- Support to Bund-Länder-agreement

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## Results on emissions from organic soils, monitoring, evaluation and options for action

**Birgit Thönißen, Michel Buchholtz, Susanna Belling, Annette Frohman, Christoph Förster, Elisabeth Schubert, Ulrich Seifmann, Stefan Frank, Daniel Fuchs, Jörg Gebrecht, Beate Juchacz, Andreas Lagger, Eva Reuschel, Katharina Leber-Baerwald, Jens Sacksteinen, Dominik Zak und Mathias Dreher**

**Moorschutz in Deutschland – Optimierung des Moormanagements in Hinblick auf den Schutz der Biodiversität und der Ökosystemleistungen: Bewertungsinstrumente und Erhebung von Indikatoren**




**Thünen Working Paper 15**

**Klimarelevanz von Mooren und Anmooren in Deutschland. Ergebnisse aus dem Verbundprojekt „Organische Böden in der Emissionsberichterstattung“**

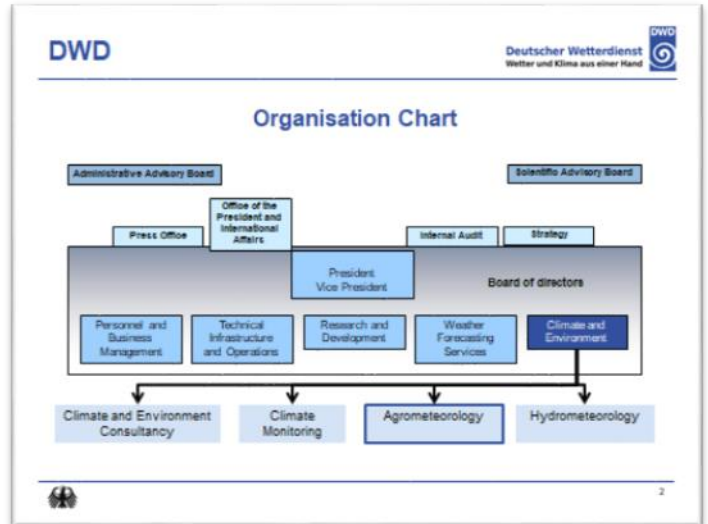
**Thünen Working Paper 105**

**... and many „peer-reviewed papers“**

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13.08.2019 | Practical example of research-based policy advice: Greenhouse gases



DWD, inKA Practical Example of research-based policy advice: The case of climate impacts (Cathleen Frühauf)



Deutscher Wetterdienst  
Wetter und Klima aus einer Hand

**Who are the customers of German agrometeorological service?**

- agricultural administrations in the Federal States and the Federal Government
- Farmers' association
- farmer and agricultural business for plant and animal production
- gardening, viniculture, orcharding and production of vegetable
- agricultural consuler
- factories for agricultural engines
- agricultural schools and agricultural areas in universities

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Wetter und Klima aus einer Hand

**What are the main tasks?**

**Department Agrometeorology**

- advisory service for the agriculture
- secure quality and quantity of crops
- "agriculture, according to the rules of a sustainable farming"
- focus on cultivation of grain, root crop, grassland and special crops such as vine, fruits and vegetables

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Wetter und Klima aus einer Hand

**What do the customers want?**

information about:

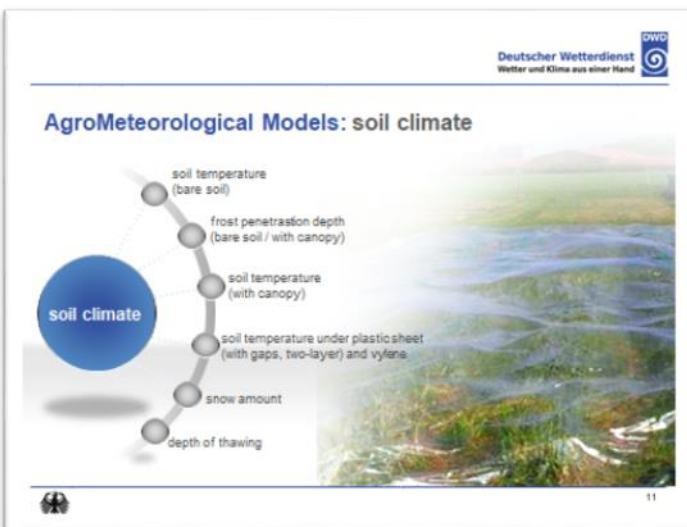
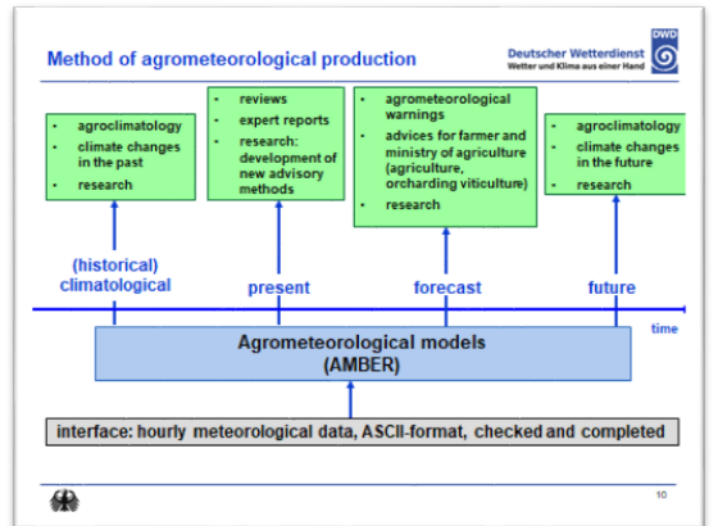
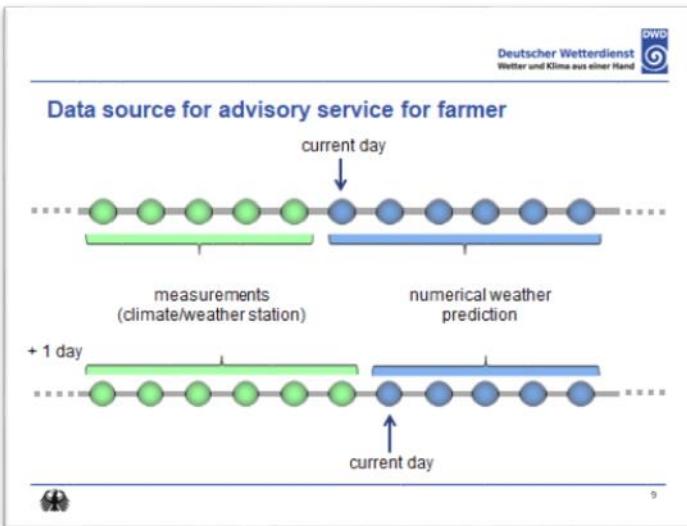
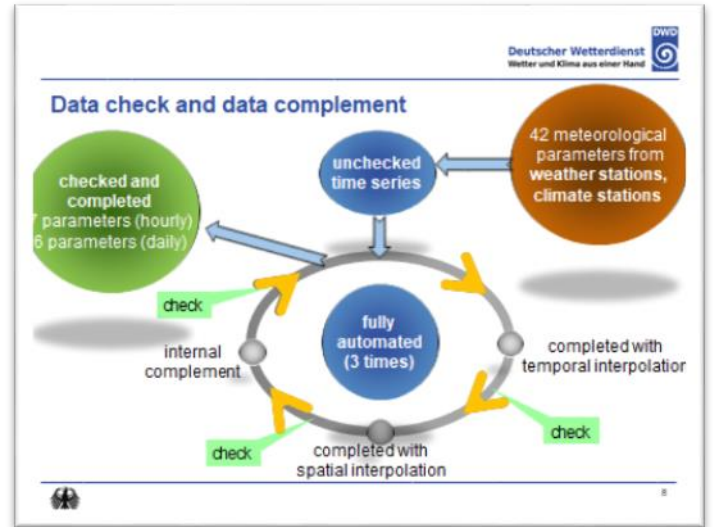
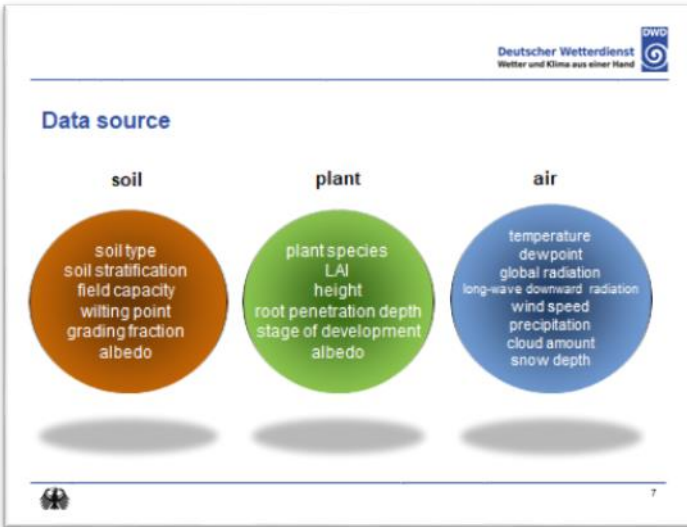
- weather forecast (precipitation, temperature, ...)
- water balance, evapotranspiration, soil moisture
- nutriant budget
- soil and canopy climate (crops without and under plastic cover)
- other risks in agriculture and forestry (erosion, forest fire, ...)
- yield optimising (corn moisture, ...)
- development of plant diseases and pests,
- planning the work

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**Agrometeorology**

weather dependent information service:  
- about 250 parameters from agrometeorological models and procedures

- improvement of agricultural works
- canopy and soil climate
- yield (quality and quantity)
- plant diseases and pest management
- warning for forest and grassland fire
- phenological predictions
- irrigation control





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### AgroMeteorological Models: e.g. forest fire

- forest fire (several techniques)
- ammonia loss during liquid manure application
- bark-beetle
- grass fire

diverse

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Wetter und Klima aus einer Hand

### Software package AMBER

#### AMBER Model Crops

implemented:

- Cereals (wheat, rye, barley)
- Maize
- Grassland
- Sugar beet
- Oil seed rape
- Potato

in stage of development:

- Sorghum
- Energy wood (poplar / willows)
- Silphium perfoliatum („Cup plant“ as an energy crop)

• 2018/2019: first measurements for Ricin, Ginger, Millet, Coffee, Peanut

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### Model AMBAV: Prozessus

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### Model AMBAV

e.g. as percentage of plant available water (PAW):

Year: 1996

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### Use of AMBAV in Germany

routine operation:

- plant available water
- irrigation control
- soil trafficability

- Ministry of Agriculture: information about extreme drought and oversaturated soils

on demand/research:

- analysis of water budget of agricultural crops

→ identification of possible cultivation areas

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Wetter und Klima aus einer Hand

### Use of AMBAV in Germany

[https://www.dwd.de/DE/leistungen/agrowetter\\_prognose/agroprog.html](https://www.dwd.de/DE/leistungen/agrowetter_prognose/agroprog.html)  
(screen view, example)

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### Use of AMBAV in Germany

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Wetter und Klima aus einer Hand

**AMBAV as Impact Model**

German adaptation strategy on climate change (DAS):

- with climate projections – future water needs of crops
- studies about extreme weather events for agriculture in the past and future
- German Climate Atlas ([www.deutscher-klima Atlas.de](http://www.deutscher-klima Atlas.de))
- Indicator for vulnerability: soil moisture

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### AMBER and climate projections

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global model      regional model

spatial resolution: 10 - 25 km  
temporal resolution: 1 day

global model: HadRM3G3, RCA3.6, HadRM3G6, CLM 2.4.4, PROMES 2006, HIRHAM 2, RRCM, CGCM3, CRCM 4.2.1, HadCM3Q0, HadCM3Q0b, HadCM3Q0r, ECHAM5\_r1, ECHAM5\_r2, ECHAM5\_r3, REMO 2009 (UB), CLM 2.4.11, WAttrag 2006, WAttrag 2010, STAR, REMO 2009 (BIG), CLM 2.4.11

regional model: HIRHAM 2, HIRHAM 5, RCA 3.6, BCM, IPSL, CNRM CM3, ALADIN\_RM4S, ALADIN\_RM5S1, HIRHAM 5, CERA, ENSEMBLES

scenario: A1B

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### AMBER and climate projections

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Wetter und Klima aus einer Hand

21 regional models

measurements 1961 - 1990      climate predictions 1961 - 1990      climate predictions 2011 - 2040 till 2071 - 2100

AMBER - application

- comparison AMBER-results 1961 - 1990 (input data: measurement and climate prediction)
- assessment of the future

German Climate Atlas: [www.deutscher-klima Atlas.de](http://www.deutscher-klima Atlas.de)

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### German Climate Atlas

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Wetter und Klima aus einer Hand

**common**

- air temperature
- ice days
- frost days
- summer days
- hot days
- tropical nights
- precipitation
- start of vegetation period
- forest fire index

**agriculture**

- soil moisture under winter grain / sugar beet
- start of vegetation period
- days with changing frost
- start of flowering oil seed rape
- maize (yield and ripeness)
- pasture (yield 1st cut)
- plant hardiness zones and plant heat zones
- Hugin-index (heat index for grape varieties)
- depth of frost penetration
- maximum of soil surface temperature
- air temperature
- precipitation

**forestry**

- forest fire index
- bark-beetle development (start of infestation + end of 1st brood)
- plant hardiness zones and plant heat zones
- start of vegetation period
- air temperature
- precipitation

**soil conservation**

- soil moisture under winter grain / sugar beet
- depth of frost penetration
- maximum of soil surface temperature
- air temperature
- precipitation

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### Beginning of Vegetation Period

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Wetter und Klima aus einer Hand

long-time mean      anomaly 1981-2010 in comparison to 1961-1990

1961 - 1990      1981 - 2010

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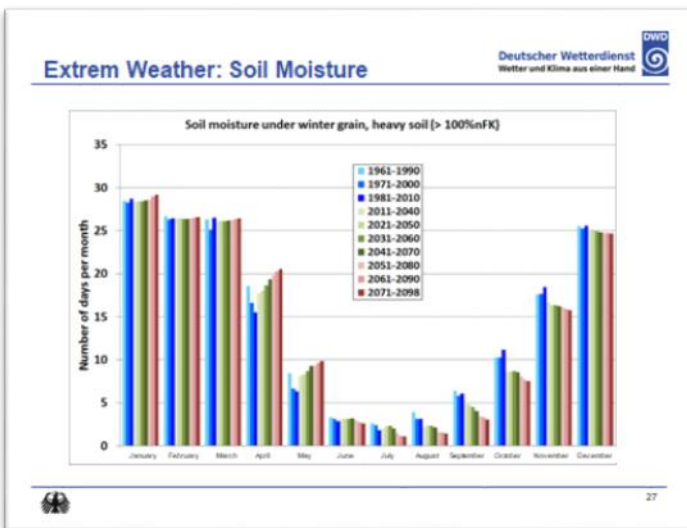
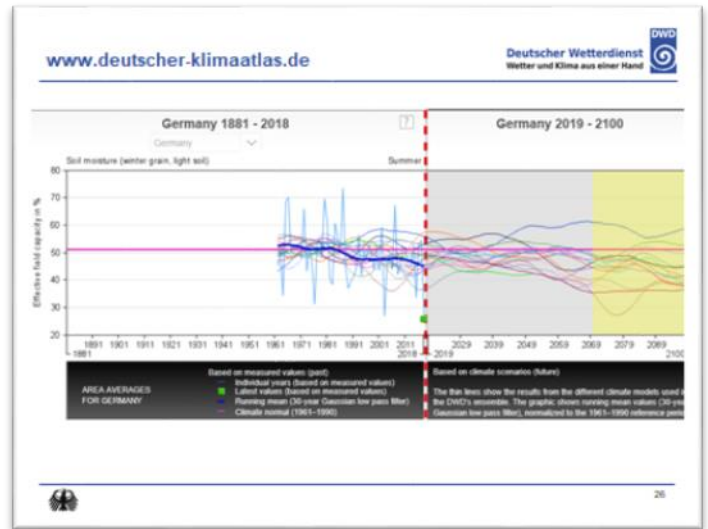
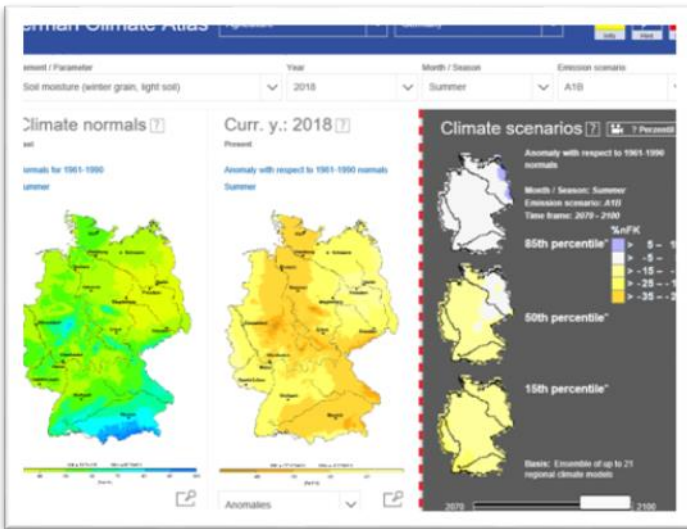
### AMBAV Low Soil Moisture

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Wetter und Klima aus einer Hand

number of days with soil moisture < 50% useable field capacity crop: winter grain, light soil period: April - October

1961 - 1990      1971 - 2000      1981 - 2010

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### BENEFIT

...OF AGROMETEOROLOGICAL ADVICE

- achievement of optimal harvest
  - optimal timing of sowing and harvesting
  - optimal timing and amount of irrigation
  - optimal timing of frost protection measures...
- environmentally sound cultivation
  - reasonable handling of soil and water resources (e.g. concerning the timing of the use of pesticides)
- Consultation of the politics concerning:
  - Environmental legislation
  - Assessment of „extreme weather events“ linked to climate change
  - Capacity building,...

**inKA**

interdisciplinary contact point Agrometeorology (inKA)

- central contact point for federal agencies for interdisciplinary questions about weather and climate impacts on agriculture and forestry
- important contribution for research-based policy advice of the 3 institutions Thuenen Institut, Julius-Kuehn Institut and DWD
- founded 2018

Prof. Dr. P. Becker (DWD)    Prof. Dr. G. Backhaus (JKI)    Prof. Dr. F. Isenmeyer (Thünen Institut)

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**inKA**

### Goal

- Pooling of expertise of the institutes
- Enhancement of teamwork
- use of synergy effects
- Avoidance of duplication of work
- Reduction of costs and manpower requirements

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**inKA**

THÜNINGEN | JKI | Deutscher Wetterdienst

**3-stufiger Ansatz**

1. Daten vorhalten  
Auflistung der vorhandenen Daten → schnelle Beantwortung möglich
2. interdisziplinäre Fragestellungen beantworten
3. gemeinsamen Forschungsbedarf identifizieren und interdisziplinäre Forschungsvorhaben anregen und wichtige Forschungsfragen in den politischen Prozess bringen.

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**Agrarmeteorological research and modelling**

Deutscher Wetterdienst

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**AMBAV – soil moisture**

Deutscher Wetterdienst

**agrarmeteorological modelling:  
z.B. soil moisture in %nFK (1995)**

über 20 Jahre kontinuierliche Verifikation der Modellergebnisse

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**AMBAV: new crops**

Deutscher Wetterdienst

**Phénologie:  
BBCH-Code ex. winter wheat (blé hiver)**

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**Canopy Height and Root Depth**

Deutscher Wetterdienst

**during the vegetation period**

**Canopy height:** information for aerodynamic resistance  $r_a$  and to estimate LAI

**Root depth:** information from with soil layers the crops can extract water

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**Leaf Area Index (LAI)**

Deutscher Wetterdienst

Leaf area in  $m^2$  per  $1 m^2$  soil surface

LAI determined:

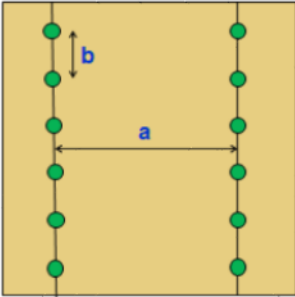
- Transmission of sunlight through the canopy
- Interception of water
- Reduction of precipitation, which is reaching the soil surface → influence on soil moisture

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### Canopy Characteristics (First Step)

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Wetter und Klima aus einer Hand

Distance between Rows (a) and Plants (b):



Information about:

- number of plants per 1 m<sup>2</sup> or 1 ha
- during the development of the crops (e.g. weekly)
- canopy height
- photos

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### „AMBAV global“ / main model characteristics

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Penman-Monteith evapotranspiration relationship

$$\lambda E_c = \frac{\frac{\partial q_{sat}}{\partial T} \Big|_{T_a} (R_n - G)_c - \rho_a c_p \frac{q_a - q_{sat}(T_a)}{r_a}}{\frac{c_p}{\lambda} \left( 1 + \frac{r_c}{r_a} \right) + \frac{\partial q_{sat}}{\partial T} \Big|_{T_a}}$$

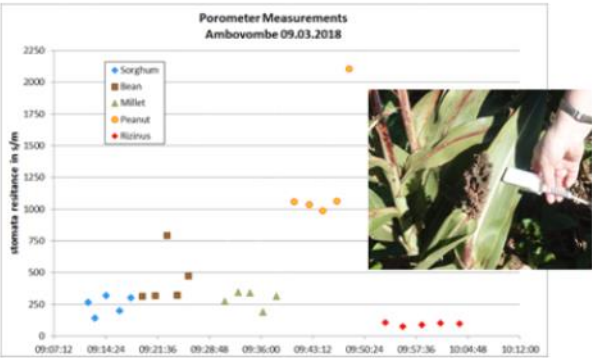

Aerodynamic resistance  $r_a = f[vv, h_a, z_0=f(h_c)]$   
 Bulk canopy resistance  $r_c = f[r_{st}, r_v=f(r_{st}, LAI), r_s]$

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### Stomata Resistance

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Porometer Measurements  
Ambovombe 09.03.2018

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### Objectives of the Cooperation in Madagascar

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- Start of a cooperation between DGM and DWD in the agricultural sector
- Capacity building for national stakeholders in order to:
  - Produce a more realistic forecast about the water availability and water need of agricultural crops
  - Which could enhance the agrometeorological information products in Madagascar

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### Key results of the Mission

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- There are technical and human capacities to run the model AMBAV
- High motivation of the technical experts involved
- We are optimistic based on the first impression, that AMBAV can be adapted and be used in Madagascar
- Constraints encountered:
  - Data transmission and storage
  - Phenological observations
- The agrometeorological products could benefit from the outputs of AMBAV

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Writing Policy Advisory Statements – Examples (Claus Deblitz)



### Writing policy advisory statements - examples

Claus Deblitz  
Thünen Institute of Farm Economics



Braunschweig 14.08.2019 PHD Summer School Germany, 2019



### Which forms of policy advice exist?



**Telephone / oral**

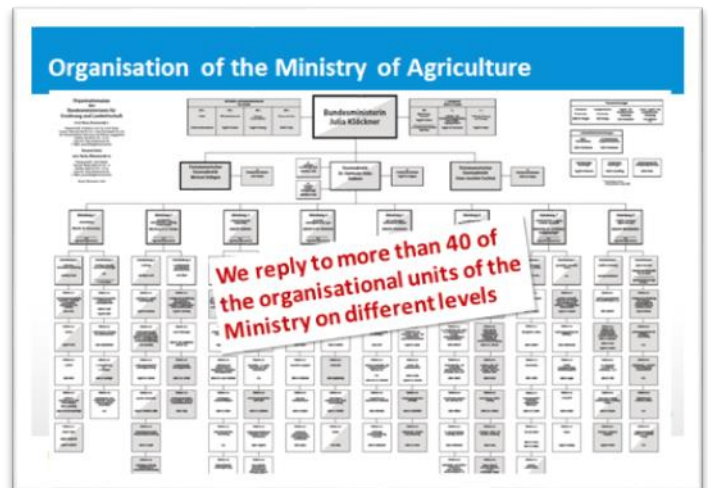


**Meetings  
Secondments**

- Short Email statements / assessments (< ½ day)
- Formal written statements reflecting on or more specific questions (> ½ day)
- Reports with substantial length and involvement of many colleagues (example Baseline)
- Concept or strategy papers
- Commentaries / reviews of third party papers (for example OECD)

**Written**  
(sometimes PPT)

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### How many days of policy advice are we doing p.a.? (number of days per year for advice to the Ministry)

Institute	Type of advise		Subtotal	Secondments	Total
	Written (Statements, Reports etc.)	Participation in meetings			
Institute of Rural Studies (LR)	748	221	968	21	990
Institute of Farm Economics (BW)	861	109	969	32	1001
Institut of Market Analysis (MA)	340	107	447		447

Source: Thünen/AgriBenchmark 2018

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### Examples for results and their further use

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## The start

### 1 Think about your target group

- What is their background? Are they ag economists?
- How does their day look like?
- What are they going to do with your advice?

### 2 Form before content

- Create / use a fix layout
- Create / apply an easy-to-use word template

### 3 Leave your own agenda behind

- Your opinion as a private person does not count
- You have to bring facts to an informed decision making

## Ethics and funding

### 1 We aim to be independent and committed to facts and scientific principles

### 2 Difference between public and private institution

- Often, public employees can allow themselves more often to say „No“
- However, we sometimes have to make compromises on the „political“ side such as rephrasing of sensitive sections, postponement of publication

### 3 However, never „sell“ yourself to produce a pleasing opinion - it will damage your (and eventually your client's) credibility

## Organisation of the work

## Structure (I) – unless you just reply to specific questions

### 1. Introduction

- Describe the task and the questions you were given:

*„With a letter from 19.08.2019, BMEL, department OB15, asked the Thünen Institute of Farm Economics to provide a statement on the alternatives of piglet castration without anaesthesia“*

- Provide some contextual background of the issue

*„The castration of piglets without anaesthesia has been a long-year practice in German pig production. Societal pressure through NGOs and media has lead to a rethinking of these practices and policy is asked to provide solutions. However, it is likely that these changes will create significant costs on farm level.“*

- Describe the objective of the following text

*„Consequently, the objective of this report is to analyse the implications of alternative practices in terms of animal performance, farm-level costs and feasibility of their implementation.“*

## Structure (II)

### 2. Background / situation / approach

### 3. Methods and data

### 4. Results

### 5. Conclusions and recommendations

### 6. Summary

- Usually no longer than 1 page
- Targeting the leadership of the Ministry (Division leaders, Secretaries of State, Minister)
- Result oriented, advice and conclusions are most important

## Other issues

- ▶ Do not write what you know, write what the reader does not know!
- ▶ Every sentence must make a contribution to the main questions and the topic, otherwise leave it out.
- ▶ Write short sentences (and read „The Economist“ for good English).
- ▶ Do not use too many technical terms unless no alternative.
- ▶ Structure your text with headers, subheaders and bullet points instead of producing „lead deserts“

[CD Summer School 2019\\_190814.docx](#)


## Other issues

- ▶ **No abbreviations** (only after introduction)  
... carcass weight (CW)
- ▶ **No scientific units: USD 10 kg CW<sup>-1</sup>**
- ▶ **Write text instead of units**  
„USD 10 per kg carcass weight“ instead of „USD 10 / kg CW“
- ▶ **Make conclusions after each chapter\* and try to make a transition to the next chapter. Example:**

*„The analysis has shown that the boar fattening and the immunocastration with Improvac can improve animal performance. In contrast, the surgical measures with anaesthesia regularly lead to a reduction of performance. In the next chapter, we analyse their effects on the costs and the profitability.“*

\* If properly done you can copy-paste them as a basis for your summary

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## Hope to see you again













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