IT-supported State-land Management in a Transitional Environment - Examples from Eastern Germany and Mongolia -

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Key words: state-land management, IT-support

SUMMARY

BVVG AgriForest Privatization Agency (BVVG) is the German state-owned agency for managing and privatising formerly publicly owned agricultural and forestry land in Eastern Germany. The agency created its own land information system that consists of a data base and a GIS with special functionalities for state-land management. More or less all internal business processes are driven and supported by this IT-system. While the data base contains important information, such as e.g. the legal status of a parcel, contractual information and restrictions in use, the linked GIS-extension provides spatial data (e.g. location, size and distribution) of land in BVVG's portfolio and surrounding parcels. The land information system supports the sales and lease officers in their daily work. It provides all required spatial and non spatial data, inter alia parcel and contract information as well as data for land valuation purposes.

BVVG's IT-strategy of developing such a land information system was based on the principle of carrying out the development in stages in order to guarantee a quick return on investments. By involving the technical departments in the developing procedure the IT-Dept. avoided an IT-development past the needs of the users. Standardized testing of new products and consequent documentation as well as user trainings made the development successful.

Experiences from 20 years of designing and maintaining such an IT-supported land information system were also incorporated in BVVG's foreign consultancy activities. In a GIZ financed land management project in Mongolia BVVG together with *GFA Consulting Group* and *GCI-Dr. Schindler Geo Consult International* was involved in the development of a so called "land manager software package" which is a tool-box that combines cadastral and state-land management functions and moreover allows for land market monitoring. The land manager was developed for a state agency in Mongolia that is responsible for the cadastre and state-land management in Mongolia. The GIS enables the visualization of spatial information and supports the cadastre and surveying functionalities of the tool. The possibility of storing all data in one database fosters the transparency and accountability of daily business processes and allows the use of the same data for different tasks. A participatory approach to software development and step-by-step programming ensured the consideration of customer wishes.

In summary it can be stated that an IT-based land information system including a spatial component is an indispensable tool for effective and transparent state-land management. However, the complexity of the desired system has to match the given frame conditions, such as available financial means, long-term availability of appropriate personnel and data availability. Special attention has to be paid to a long-term and sustainable IT-strategy.

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1. INTRODUCTION

In many countries around the world a large proportion of land is in state-ownership. This land is often either under or over utilized and sometimes poorly managed by state agencies. Effective management of such land can contribute to the development of various economical sectors while simultaneously generating income for the state budget. Moreover it can trigger land market development.

Effective use of state-land requires a consistent land policy and legislation as well as institutions managing the land. The management can be professionalized considerably when it is supported by a land information system including a GIS extension that contains geographical, legal and additional data on state-land and its surrounding areas.

In Germany, after reunification in 1990 the *German Treuhandanstalt* (THA-Privatization Agency) was founded and was responsible for the management of all publicly owned assets of the former GDR. Those assets included commercial and industrial enterprises of the former GDR as well as publicly owned agricultural and forest land. Due to the specifics regarding the management of agricultural and forestland, the *BVVG AgriForest Privatisation Agency* was established as affiliate of the THA in 1992 and all agricultural and forest land in state-ownership was transferred to this state-owned limited company.

In order to support BVVG's staff to fulfill their assignments in the context of managing the assets in BVVG's portfolio the company developped its own land information system. More or less all internal business processes are driven and supported by this IT-system. Experiences from 20 years of designing and maintaining such an IT-supported land information system were also incorporated in BVVG's foreign consultancy activities. In a GIZ financed land management project in Mongolia BVVG was involved in the development of a so called 'land manager software package'. This is a tool-box that combines cadastral and state-land management functions and moreover allows for land market monitoring. The 'land manager' was developed as pilot for a state agency in Mongolia that is responsible for the cadastre and state-land management in Mongolia.

This paper focuses mainly on agricultural and rural land, and will describe the development and the functionalities of both tools, the land information system used by BVVG and the so called 'land manager' developed in the framework of the above mentioned GIZ project in Mongolia. It will highlight the necessity of an IT-strategy and will describe various use-cases. Special emphasis will be put on the determination of market values for land as basis for sales and lease activities. The paper will also point out the benefits and challenges related to the installation of an IT-system designed to support state-land management.

2. A LANDINFORMATION SYSTEM SUPPORTING THE MANAGEMENT OF STATE-OWNED AGRICULTURAL LAND IN EASTERN GERMANY

2.1 History and main components of the IT-system

After the THA handed over the assignment of managing state-owned agricultural and forest land in 1992, BVVG faced numerous tasks that had to be accomplished simultaneously. The legal framework governing privatization, allocation and restitution of this state-land was not yet at place. Nevertheless, the agency had to work on strategic questions regarding the interim management of land in order to keep it utilized. It also had to decide on the institutional set up of the agency. Last but not least land allocated to BVVG for management had to be inventoried. In fact, reliable figures on land only exist since 1996. This shows how challenging this task was.

Soon, the need for an IT-system to record and process land and management related data came apparent. In 1993 the company decided to use a database-system developed by the former GDR-authorities that already contained parcel based information of the areas in the former GDR. This data-base provided the initial data of properties under state-management. The data-model managed in a dBase-shape was the basic data-model for the land information data base (LI-DB) of the BVVG. The LI-DB serves its purpose until today and continues to be an indispensable tool for currently approx. 700 users in 8 branch offices.. Nowadays this LI-DB is managed using an IBM DB2 database system that runs on a terminal-server architecture,. All locations and users are connected via a wide-area-network and lately in a CITRIX environment.

The basic data-model provides 13 different categories, for example “parcel”, “application”, “contract”, “restriction” The central object of the data model is the cadastral land parcel and almost all recorded information and all functionalities provided are parcel linked. On the one hand this enables the user to generate all information related to a parcel, for example whether it is bound in a lease or sales contract, whether it shows any restrictions in use, whether any claims or applications lie on the parcel - aside of general information like size and use type. On the other hand it provides information related to contracts and applications (business cases), such as personal data of the applicant, lessee or purchaser, concerned parcels of the contract or applicant in question and the status of these contracts or applications (e.g. “contract in preparation” or “contract concluded”). Aside of serving as supporting tool for BVVG’s staff that deals with the management on the operational level (sale and lease) the data base also allows for cross data queries for statistical purposes and analysis.

While during the first 10 years the LI-DB and a very specialized GIS-support used for the administration and selling of forest land as well as for mining issues were the main IT tools used for managing BVVG’s portfolio, technical progress opened the path for a more sophisticated solution. In the early 2000 the agency decided to invest into establishing a BVVG-GIS on the basis of the ESRI-software “Arc View”. Although the initial costs for investment (software, implementation and data acquisition) where considerably high, the

benefits of obtaining spatial information on parcels belonging to BVVG and surrounding areas were expected to be higher in the long run.

The major aim of establishing a BVVG-GIS supporting IT-tool was to facilitate the visualization of all parcels in BVVG's portfolio and to make spatial and non spatial information of these parcels available and usable in a pragmatic and easy manner.

One of the most important advantages of the BVVG-GIS is the ability to display and deliver maps for the parcels in the working area of the user. As mentioned, the LI-DB stores data on parcels or the area in question as well as data on existing business cases (e.g. contract information). An interface between the GIS and the LI-DB facilitates the use of this non spatial information directly in the GIS. Additional geo data, such as spatial planning data, information on mineral resources, on contaminated sites and on nature protection areas is available in separate GIS-layers.

It must be mentioned that additional IT-tools are connected to the IT-infrastructure of BVVG, for example a group ware data base that provides additional information such as company reports and an ERP that supports all internal business operations such as the financial management and the land area balance (in BVVG's portfolio). However, the description of these tools would go beyond the scope of this paper.

The following subchapter will describe the IT-strategy of the company that has lead to the land information system described above and will highlight main steps of development.

2.2 IT-Strategy and IT-Development

When considering the implementation of an IT-based land information system this above all means to have a clear vision about the costs that are connected to such an investment such as costs for hardware, software, development, support and manpower. These costs can easily reach tens of millions of Euros. BVVG spends large amounts of money per year for its IT development and maintenance. In the BVVG context this is justifiable since the costs amount to only 1 percent of the yearly revenues generated from the sale and lease of state-owned land. However, when revenues are far lower the ratio of IT-costs and revenues might be much higher.

For the development, the operation and the management of an IT-system various governance-frameworks or best practices have proved to be useful. Although during development of BVVG's IT-system such standards were not strictly followed, retrospectively it shows that many of the followed approaches equal such best practices as for example described in ITIL (IT Infrastructure Library).

For the development of an IT strategy to establish a land information system the following reflections were made:

- State-land management is a midterm or long term government assignment. In such long time periods changes in the political, legal and / or technological environment are likely.

- An IT-system can be installed as a base version at a certain moment. Because of the long-term assignment and the likely changes in the framework conditions the IT-system has to be designed in such a way that amendments are possible at a later stage.

- Therefore, not only a onetime budget for the initial development but also a yearly budget for maintenance, operation and further development of the data models and technologies must be planned.

- Because the IT-System can have a determining influence on the performance of the institutions, the upper management should be sensitized for the special requirement of the IT and the related costs.

IT-Strategy

It is important to develop a short term as well as a midterm or even long term IT-strategy. Hard- and software as well as data underlie so called lifecycles, which means that generally they have to be renewed on a regular basis, in order to secure continuous operation. Concepts for the extension or changes of the IT-infrastructure like the necessary data acquisition and data up-dating should be described in order to plan important investments. At BVVG for example, parcel information obtained from the cadastre for the BVVG-GIS is updated on a yearly basis. Another important aspect is to avoid a major fluctuation of IT-personnel. Continuity regarding the IT-staff can be a major advantage in terms of maintaining high quality, efficient IT-systems.

Service Design

Together with the technical departments the technical requirements from the point of view of the user must be discussed against the background of the technological frame conditions determined by the chosen IT-strategy. Furthermore, it has to be defined how these requirements can be provided for the different user groups. BVVG's basic policy is to first check whether new requirements can be met with existing software products and techniques in order to minimize the costs for new investments as well as costs for amendments. The key question in this respect is how to achieve a quick and stable return of investment for the organization. However, the expected total costs of ownership also serve as benchmark.

Service Transition and Service Implementation

At BVVG, new applications and program versions or data sets have to pass various testing-scenarios in the company's test environment. The testing phase is followed by a standardized procedure of approval. Only after this approval the new products are provided for operational

use. The implementation of new functionalities or the provision of additional data goes hand in hand with a respective documentation including reasoning and if necessary user trainings.

Continuous Service Improvement

BVVG's strategy to develop its land information system in stages proved to be reasonable in terms of receiving an early return on investment. It facilitated that experience gained through the daily operation could be used to formulate further requirements for amendments faster and more precisely and avoided that the IT-development went past the needs of the users.

2.3 IT-Support for Sale and Lease Activities

On the operational level the main assignment of BVVG is the selling and leasing of the state-owned agricultural land in its portfolio. The LI-DB is the main supporting tool for BVVG's sales and lease officers. As already mentioned it is connected to the BVVG-GIS. This facilitates the data exchange between the two applications. LI-DB and the BVVG-GIS together provide all required spatial and attribute information on parcels.

The user – the sales and lease officer (SLO) – receives spatial information of an area in question by browsing into that area or selecting a certain business case, such as a lease contract. The SLO can chose between various background and operational layers of the GIS like inter alia topographical maps, aerial photography and cadastral data to visualize geographical and attribute information on a map. For detailed analysis the SLO can use additional layers that provide spatial and attribute information, for example about contaminated sites, regional planning, and nature protection areas.

This enables the user to generate manifold information on an area where BVVG-parcels lie and helps him/her to manage these parcels adequately. The following examples highlight some of the most important issues:

- The SLO receives information about the location, shape, type and use of a parcel (or lot) in question as well as geographical and non spatial information on the surrounding area.

- With help of the information provided by the GIS the SLO can also determine whether BVVG-parcels lie in an area marked as potential building land, building land or nature protection site according to respective spatial planning documentation. If so, this can influence the SLO's decision on when to tender such parcels for sale or lease and how to design the tender.

- When a contaminated site lies on BVVG-parcels the SLO knows that this parcel has to be monitored more closely. Also, this information has to be considered when adding the parcel to a tender lot for sale or lease because it has implications on the sales and lease negotiations and contractual issues.

- When determining prices for the sale or lease of a land parcel (or lot) the SLO with help of the GIS can display price information in the area of interest (also see 2.4).

- The SLO can record and communicate the results of his work in the GIS work by using "out of the box" maps, GIS-Data and reports.

The graphical user interface (GUI) of the GIS provides an online connection to the LI-DB that offers the SLO two main functions when he wants to display up-to-date information from the LI-Database in the GIS. On the one hand he can execute predefined queries in the LI-database for parcels that are selected on the map. This functionality provides attribute information for several information categories from the LI-DB. On the other hand the SLO can visualize a distinct business case like a lease or sales contract, or case based information such as restrictions or land register data directly on the map. By using the online connection to the LI-DB the required information is displayed graphically and is available in additional GIS layers as well as in attribute tables of the GIS.

This enables the SLO to analyze all available data with respect to his/her assignments. For example, when the category "lot forming" is chosen all important information for the forming of lots attached to the area in question are shown. The SLO can detect if lease or sales contracts have been concluded in the area, can see the parcels belonging to the contracts and, in combination with the layer "BVVG-parcels", can identify parcels not subject to a sales and lease contract. The spatial dimension helps the SLO to combine rational tender lots considering location, size and distribution of such "free" parcels. If the SLO finds small parcels not bound in any contract, he/she might consider offering them to the lessee leasing adjacent parcels. The contract information indicates where lease contracts might soon run out and together with "free" parcels could be considered in a new tender lot.

2.4 IT-support for the Identification of Market Prices

The identification of rational lease- and sales prices continues to be one of the main questions with regard to the management and privatization of state-owned land in Germany. Since the general economic development of a country also reflects in prices for real estate, the market value of land is used as benchmark in order to secure higher state revenues. According to the „Communication of the European Commission of 10 July 1997 on State Aid Elements and Sales of Land and Buildings by Public Authorities, C 209/3 of 10 July 1997" the market value has to be determined to avoid hidden state aid when privatizing state-owned assets.

The identification of this market value was also of vital importance in the framework of privatizing land in BVVG's portfolio in Eastern Germany. The following will describe the IT-supported procedure of determining appropriate sales prices for agricultural land that BVVG uses since 2007.

The implementation of the German Building Code in the 1960's provided comprehensive instruments for monitoring the land and real estate market. Main elements are the so called

valuation boards situated in the cadastre offices and building administrations. The boards are assigned to establish a sales price collection and extrapolate average sales prices. These prices are then published as so called standard land values for the areas where the sales transactions took place. However, these standard land values always reflect the market situation of the past 1-3 years. Since BVVG sells larger amounts of land in a relatively short period of time temporary price developments have a major influence on the potential revenues.

Starting in 2007, BVVG offered a constantly rising share of land subject to privatization by public tender. The achieved sales prices in these tender procedures – in line with the above mentioned EU-regulations – reflect the market level most adequately. However, these sales prices – for various reasons – enter the sales price collection of the valuation boards with temporal delay. Appraisal reports for land subject to privatization – based solely on standard land values (see above) - therefore often reported a lower market value as apparently existing. Furthermore, the sales price collections almost without exception didn't provide reference on the procedure of how the prices where achieved.

Therefore, in 2007 BVVG decided to use its land information system as supporting tool for valuation of land by recording additional data required for this purpose. The aim was to consider the higher prices of the BVVG tenders when determining the market value of a land parcel or lot that was meant to be sold not via tender but via direct sale[1] according to BVVG's privatization regulations. The land information system already contained data on the company's different sales cases and separated them in different categories (sales at reduced prices according to the land purchase program, sales through tender or direct sales). Additionally, sales data – obtained from the valuation boards - without BVVG involvement was added to the system. So, in fact sales prices from four different sales procedures were recorded and could be displayed.

All sales transactions by BVVG because of the parcel based data model can be spatially allocated in the GIS. Sales data without BVVG involvement, where an exact spatial allocation isn't possible, is linked spatially to the sub-district where the sales transaction took place.

When a certain parcel or lot is subject to valuation, all sales cases in a 20 km radius of the parcel / lot can be illustrated in the GIS. These sales cases are then shown in an MS Excel file in order to proceed with (mainly comparative) valuation analysis. Specially trained staff can determine the regional market value of the past and can prognosticate the prospective obtainable market price for the lot in question.

The most important advantages in using the land information system to identify appropriate prices can be summarized as follows:

With the traditional valuation procedure used before 2007 – using only data from the valuation boards – rising or falling market levels could only be illustrated with a large temporal delay. The new IT-supported valuation procedure exclusively designed by and for BVVG that combines data of the valuation board with company sales data provides up-to-date

[1] directly to a determined party, usually the lessee, who leased the land before

valuation data available on a monthly basis. Sales price analysis can be made separately for each kind of sales procedures. As result, the sales prices for agricultural land for BVVG lots have risen up to 20% per year since 2007.

3. MONGOLIAN "LAND MANAGER SOFTWARE PACKAGE"

In 2005, the German Technical Cooperation (GTZ, now GIZ) launched the project "Land Management in Mongolia – Build up of a Fiscal Cadastre", which supported a public sector agency in charge of land management and land administration tasks - ALACGaC - in finding solutions for specific land management questions, such as the IT-supported management of (state-owned) land, including the management of possession and use right contracts, the mass valuation of land as well as the levying of fair land taxes and land fees. The project was implemented by a consortium that includes the GFA-Consulting Group / GCI-Dr. Schindler Geo Consult International and BVVG Agriforest Privatization Agency.

The core tool developed as part of the project is an open source based software package – the 'Land Manager' – that is based on cadastral data and consists of a data base management system in connection with a GIS. The GIS enables the visualization of spatial information and supports the cadastre and surveying functionalities of the tool. The possibility of storing all data in one database fosters the transparency and accountability of daily business processes and allows the use of the same data for different tasks.

The 'Land Manager' supports the following business processes related to the management and privatization of state-owned land:

- The cadastral based identification and inventory of immovable property.
- The administration of requests and contracts for use or property rights as well as for privatization.
- The issuance of property or use rights as well as the preparation of first time privatization.
- The updating of cadastral information on the basis of existing contracts concerning property rights, use rights or land sales and surveying services.
- The procedure of distributing property and use rights and of land sales.
- The levying of land fees, and the collection of revenues from privatization activities and other administrative fees.

Furthermore the 'Land Manager' stores data that is relevant for valuing land as well as determining market prices (for lease arrangements as well as for land sales) and different value zones, and therefore works as a tool for monitoring the land market. The data that is stored covers immovable property transactions between public and private parties as well as between two private parties, and therefore discloses price differences. This allows ALACGaC to strategically adapt the price of state-owned land to the price of private land. In addition, this market information can be used as a basis for land taxation, and can be made available to the public in order to prevent speculation.

The 'Land Manager' was developed by the consulting consortium together with ALACGaC whereby specific technical inputs were provided mainly by two consortium partners. One partner –a private consultancy company with world-wide experience in programming open source based GIS– delivered the technical expertise for software programming. The second partner –a state-owned company responsible for the management and privatization of state-owned agricultural land in Germany (BVVG)– provided know-how in the field of IT-supported state-land management, including the establishment of effective and transparent operating procedures, financial monitoring and contract management (of lease and sales contracts). The technical input of these two companies, each highly specialized in their technical fields, resulted in a high quality product as output.

A participatory approach to software development and step-by-step programming ensured the consideration of customer wishes. Although this required a longer period of development, it did not result in additional expenses.

Because the system is based on open source software, it represents a cost effective alternative to commercial land management systems. Possible adjustments or the further development of the data model and the GIS-supported functions are all based on open source software. Interfaces facilitate a connection to other specialized software. For instance, the system provides office automation, so that letters, contracts and reports can be easily drafted by using data stored in the database system.

To foster transparent internal and external financial reporting about revenues from management or privatizing state-owned land, the land information system can also be linked to a financial management software, which meets the International Public Sector Accounting Standards (IPSAS)[2]. An integrated audit tool facilitates the automated and objective analysis of the status of work flow and results. Management information can be produced automatically, which is important for planning, controlling and detecting relevant risks.

In addition, an integrated knowledge database ensures the sustainable use of the software within ALACGaC. Guidelines for the different business processes and information on how to use different parts of the software stack are written in an interactive help file that is available to all users. Because all information catalogues within the database system are designed bilingually (English and Mongolian), international experts can also read the stored information and support the local colleagues with the interpretation and analysis of the data. This bilingual approach facilitates the transferral of this IT-system to other countries and environments.

The combination of open source and commercial software for specialized applications and a business process oriented software development secures fast initial success and high acceptance and thus ensures the tool's sustainable use. The total costs of ownership are kept at a low level, and changes can be implemented inexpensively.

[2] Grover, Richard (2009): State and public land management: the drivers of change. In: Land Reform 2009/1, pp. 58 – 66.

The ‘Land Manager’ was tested as a working tool on a pilot base in one of the Aimags in Mongolia, where it saved around 80 percent of working time, because recorded information could be used for several different operating procedures. The user friendly design and the wide range of functionalities convinced ALACGaC so that the nation-wide implementation of the IT system is currently under discussion.

The ‘Land Manager’ based on open source software in combination with commercial applications can be judged as an innovative tool for land management that facilitates labor efficiency and good (financial) governance for the management of (state) land and land market monitoring. The user-friendliness of the tool combined with accompanying legal advisory and capacity building measures provided by the GTZ project ensure ALACGaC’s technical and administrative capacity for land governance.

4. CONCLUSION

The two examples described in this paper show that IT-based information systems including a spatial component contribute considerably to effective and efficient state-land management. A gapless inventory of state-land is hardly possible without using such a system. It delivers important information needed for the fulfilling of essential assignments such as selling and leasing of state-owned land as well as handing out use or possession rights. As shown in the example from Mongolia, such an IT-system can also be combined with cadastral functionalities and functionalities for land market monitoring.

The examples also show that IT-support for state-land management and administration should not be limited to the development of a GIS. The set-up of a data base driven management information system for monitoring and analyzing business cases and processes is as important as a GIS that provides spatial information. Combined with an additional tool facilitating internal and external financial management, such a system not only simplifies and accelerates business operations. It also allows for accountability and transparency in the context of managing state-land that – after all – is a public good.

A land information system containing a knowledge data base providing help files and functionalities empowers self learning and a fast adaptation of lessons learned. This is relevant especially when state-land management units are situated at various different locations.

Essential for the success of an IT-driven land information system is a participatory approach when developing the system. A development without considering the requirements of the different stakeholders can lead to a stillborn project. Modern IT-governance frameworks such as ITIL provide good orientation on how to structure the development of such IT-systems.

The described examples from Germany and Mongolia can also serve as models for other countries that administrate state-owned land. However, as shown, special attention needs to be

directed to choosing an appropriate IT-strategy. Even if opting for a low cost approach (as described in the Mongolian example) the costs for extending and amending the system have to be considered and continuous operation must be guaranteed. Especially when using open source software the issue of providing sufficient continuity in terms of staffing is of outmost importance. In an environment where the private sector acts as competitor for well trained IT-staff special attention should be drawn to the possibilities of retaining IT-staff in the public institutions. If this issue is neglected the most sophisticated IT-system can be condemned to failure.

The individual design of such a land information system depends on the specific situation in the country like the legal framework for state-land management, the administrative procedures stipulated and the institutional set-up for state-land management. However, certain frame conditions have to be met in all countries, the most important being the existence and accessibility of cadastral data.

In summary, it can be stated that an IT-based land information system is an indispensable tool for effective and transparent state-land management. However, the complexity of the desired system has to match the given frame conditions, such as available financial means, long-term availability of appropriate personnel and data availability. Special attention has to be paid to a long-term and sustainable IT-strategy. A development in stages has proven advantageous considering the fact that state-land management generally is a long-term assignment.

BIOGRAPHICAL NOTES

Katja Dells worked in the sales and lease Dept at BVVG's headquarters - a German state-owned company responsible for the management and privatization of former publicly owned agricultural and forest land in Eastern Germany - since 1995. In 2003 she changed to the International Consulting Dept. of BVVG and became Head of Dept. in 2004. She is responsible for the project management within the scope of BVVG's involvement in international advisory projects and also works as an expert in EU and GIZ funded projects.

Andreas Glaesel worked in various Dept. of the BVVG Branch office in Dresden for more than 10 years. In 2005 he changed to BVVG-Headquarters. After working in the International Consulting Dept. for approx. 2 years he became a senior auditor in the Internal Auditing Dept. Andreas Gläsel is engaged in different internal auditing and consulting projects for the managing board of BVVG that inter alia focus on IT-systems and valuation. From 2005 to June 2012 he was BVVG's project coordinator for the GIZ Project "Fiscal cadastre/Land Management Mongolia" that BVVG implemented together with GFA-Consulting Group and GCI-Dr. Schindler Geo Consult International.

Michael Gabel works at headquarters of BVVG since 1996. Between 1996 and 2001 he was responsible for the investigation and documentation of formerly publicly owned land and related contracts. In 2001 he changed to the ICT Dept. As an expert for Geographical Information Sciences & Systems he is responsible for the development and maintenance of the BVVG-GIS.

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