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Combining Administrative Data to Support Evidence-Based Land Policy Reform: Lessons from Ukraine [1]

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ABSTRACT

The lack of reliable and up to date data on land governance is a common issue for countries in developing and developed world. A new approach for generating land data is related to utilization of existing administrative records of government agencies. The case of Ukraine demonstrates how the data from the State Land Cadaster, Registry of Rights, Tax Authority, Court Administration and other agencies can be linked together to produce a comprehensive description of land governance at regionally disaggregated level. A pilot implementation of the Monitoring system was completed in 2015. Results demonstrate a significant diversity in quality of land governance across the sub-national administrative units (rural rayons and cities) and can be used as a base-line for assessment of performance of relevant local authorities and some of the recent reforms in the sector. These differences are unrelated to the common national legislation and are related to factors at the local level such as resource endowment, infrastructure and local government decision making. The results demonstrate that the key challenge to development of land market in Ukraine is related to access to finance, a temporary ban (Moratorium) on sales of agricultural land and non-transparent practices at the local level.

A data set with more than 140 characteristics for the universe of over 600 sub-national administrative units was generated as a result of pilot implementation of the Monitoring system. For most indicators, the data covers period 2014-15 and reported quarterly. This data set is available in public domain and was used to establish a comparative ranking of land governance at the local level. Pilot implementation of the Monitoring in Ukraine faced several challenges including: i) the quality of generated land statistics is conditional on completeness of administrative records (combination of data from different sources helps to assess the gap); ii) most of the authorities do not follow the standards for classification of administrative units, as boundaries of service areas do not always coincide with administrative boundaries; iii) rigidities with data access are related to flexibility of design of the software used for processing and maintenance of administrative records. Development of a comprehensive reporting system allows addressing several practical issues (e.g., assessment of tax gap, mass valuation of land, design and assessment of land reform). To sustain the system, normative acts with reporting requirements and software need to be developed. Land governance monitoring reduces information asymmetry regarding the land use, land availability and performance of local government, and, thus, helps to reduce the moral hazard effect in government decision making.

Keywords: land governance; Ukraine; monitoring; administrative data, transparency, accountability, land reform

PAPER

1. Introduction and motivation

Land is an important factor of production, mean of asset accumulation and development of urban and rural areas. Thus, imperfections in governance of land resources have far-reaching consequences including stagnation of local economic development, poverty trap, low investment attractiveness, low access to capital, conflicts, eviction, land grabbing, etc.

Most of these problems, however, have common roots: information about land rights, land use, land availability and government decision making is asymmetric and protection of land related rights is weak.

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The overall results of these information imperfections are related to underdeveloped land markets, low transferability of land, low prices for land, inefficient distribution of land resources and imperfections on the interlinked markets (e.g. credit), rent on information (corruption, speculation), lack of productivity growth and technology transfer. The information asymmetry is also a reason for inefficient design of land reforms and lack of their implementation. Thus, reducing this asymmetry would have a profound impact on growth of urban and rural areas and governance of land resources.

Various national and international programs and policies were designed and implemented to reduce the information asymmetry regarding the land rights, their transfer and dispute resolution. Land cadasters and land titling programs in some countries exist for hundreds of years, while in many others they were introduced only recently. Development of the information technologies (including remote sensing) have greatly facilitated this progress. Nevertheless, the causal effect of introducing such systems on improvements in land allocation and investments are yet to be assessed (as many of such innovations were introduced to replace some already existed traditional systems of identification and protection of rights to land).

The issues of non-transparent land use and land allocation remain current for many countries. They are particularly important for governance of state and communal land. But, the same issues are also relevant for private land, where cases of non-formalized land use, violations in zoning and designated use, informal transfers and outdated cadastral records are not uncommon.

As land is an immobile asset, land markets are geographically fragmented and local governments in many countries play an important role in governing land resources. However, information on performance of such local markets and government decisions are not available (with rare exceptions), which provides room for non-transparent practices, opportunistic behavior and sometime market failures.

A response to this challenge belongs to a more general field of efficiency of local governments, institutional arrangements of land market and establishment of information revelation mechanisms and better contract design.

Talking specifically about the governance of land resources, the need for better access to information and use of information for monitoring and evaluation of land policies is clearly recognized by UN as it is stipulated in the Voluntary Guideline for Governance of Tenure (FAO 2012).

Several initiative to address the issue of access to information and transparency of land governance were taken by other international organizations. Starting 2010, The World Bank has developed a diagnostic tool – Land Governance Assessment Framework (LGAF) - for assessment the state of land governance at national level (Deininger et al, 2012). By 2016, this tool was used in more than 45 countries. It helped to reveal the state of land governance and provided recommendations for improvement. One of the common recommendation for these countries was to improve access to information on land governance, to provide regular updates and to reveal the relevant information at subnational level. In some countries (e.g. India, Brazil) LGAF was implemented at sub-national level.

Among other international initiatives are Land Matrix/ Global Observatory (http://www.landmatrix.org/), which collects information about large-scale land acquisitions. LandMark (http://www.landmarkmap.org/) collects and disseminates critical information on the collective land and natural resource rights of Indigenous Peoples and local communities around the world. While providing very important information, these sources are likely to be non-representative and non-comprehensive. Thus, they would have a limited use for design and monitoring of national policies.

There are also international surveys (e.g. Doing Business, Enabling Business for Agriculture), which include some characteristic of land governance as a part of broader investment attractiveness and business climate. While results of these surveys are wildly used as country promotion tools, they are not regionally disaggregated, impossible to scale down and update frequently, and are expensive to collect data.

Finally, there are several local and national pilots for spatial data infrastructure (NSDI) development, which by design should be comprehensive and contain many details. Unfortunately, local pilots are not always scalable as data availability is not universal, have high implementation cost and may be limited to a narrow set of characteristics available to national or local land cadasters.

This brief review points out to a need for a new institutional infrastructure that would reveal information on the state of land governance at the level of local land markets (e.g. districts or provinces) where most land use and land allocation decisions are made.

At least three options for design of such infrastructure are available. Among them are:

- Establishment of a regular survey or reporting system including interviews and focus groups of key informants. While such approach is standard, it also has standard limitations: cost, time, selection and accessibility. As the size of local land market could be anywhere between 50,000 sq. km and 300,000 sq. km (an area within which a buyer, investor or a tenant would consider options if she decides to acquire or rent land in a particular region), establishing characteristics of all local markets using the survey tools becomes difficult for medium and large size countries. A regular updating of characteristics of local markets becomes practically non-feasible;

- Remote sensing becomes a popular and accessible tool for assessment of land use, changes in land use and several other physical characteristics. However, this tool cannot provide information on social characteristics such as ownership, conflicts, taxation, values.

- Administrative records of government authorities dealing with different functional areas of land

governance become a new alternative source of information as most of such records become available in electronic form. For example, tax declarations, cadastral records, court cases, - they all cover the universe of all relevant transactions or characteristics that belong to the formal side of land governance. Such individual records can be used as a source for regionally disaggregated statistics and can be updated regularly at almost no cost. It is not clear, however, if such approach is feasible and what institutional arrangement is necessary to sustain land governance monitoring system based on administrative records.

In this paper we describe the design of Land Governance Monitoring System – an infrastructure that helps to reduce asymmetry of information regarding the state of land governance at local and national level, ...- and demonstrate the case of Ukraine where the biggest progress up to date is made in establishing of such system. Ukrainian system is relies on administrative data from six different government authorities. This case demonstrates some feasible institutional arrangements, issues with linking administrative data across government institutions and options for dissemination and use of information on land governance for decision making by private and public sector at local and national levels. It also presents tools that can be used to overcome a moral hazard problem with local government decision making.

The rest of this paper is structured as follows. Section 2 presents the concept of Land Governance Monitoring System, its goals structure and stakeholders and relates it to moral hazard problem in local government decision making. Section 3 describes the case of establishment of monitoring system in Ukraine, example of institutional arrangement, monitoring results and describes implementation issues. Section 4 demonstrates how the monitoring data can be used analysis of the state of land governance by employing ranking and benchmarking of local land governance. In conclusions, we compare the case of Ukraine with several other examples and draw recommendations for other countries and development of land governance from a broader perspective.

2. Land Governance Monitoring as an infrastructure for information revelation

Regionally disaggregated Land Governance Monitoring System is considered as an institution to reveal the information on the actual state of formal land governance based on administrative data. It includes normative acts, institutional arrangement, methodology and software for collecting, processing and disseminating data on key indicators that describe the state of land governance at local land markets. The fundamental principal of the system is that it reports on the spatial/administrative units that coincide with geographic boundaries for local decision-making authorities in different functional areas of land governance (e.g. courts, tax authorities).

The institutional arrangement of the local land governance that currently exists in many countries can be described in a framework of standard principal-agent problem. Local government authority is appointed or elected to perform functions related to governance of land resources (e.g. to provide for registration of land parcels and related rights, manage state or communal land, collect taxes, resolve conflicts). In terms of outcomes and efforts of performing these functions, we face a dual problem with asymmetric information. First, the outcome for each local authority is not perfectly observable as the performance is often reported at aggregated national level (e.g. number of registered parcels or collected land tax) or at a level of individual parcel (a common situation with several cadastral or tax reporting systems). Second, the effort level of local authority is not perfectly observable as the outcomes depend on factors not observable to outsiders (e.g. number of applicants, quality of applications). The optimal behavior of the local government authority in such a setup is also standard – the authority would exert a minimal effort and extract a maximum rent on private information (including use of public resources for individual benefits).

This model for socially optimal land governance can be formalized in the following way. Consider a universe of N land parcels (with individual parcels $i \in N$) with some characteristics x_i. Such characteristics could include a state of formal registration, status of land tax payment, pending dispute, land investment etc. For simplicity x_i takes is binary (tax is paid or not, parcel is registered in the cadaster or not). Each such parcel locates in one of the local areas j ($j \in J$) where the land governance function is performed by a local authority.

Assume that a social utility function for land governance is $U = \sum_{i=1}^{N} x_i$ and local authorities are employed to maximize it (or minimize in case of conflicts) within the boundaries of a local area j. Thus, $U = \sum_{j=1}^{J} u_j$. The probability that a given parcel has desired properties $x_i=1$ (e.g. is registered) is affected by several parcel specific (k_i) (e.g. availability of historical records on ownership, owner's attitude or preference) and regional (r_j) (e.g. demand for land) factors. One of such regional factors is an effort level of local authority (e_j), which is not observable to outsiders. For simplification, we assume that the market transaction cost (e.g. for registration or dispute resolution) is an inverse of the efforts.

$$(1)\ P(x_i=1)=P(k_i, r_j, e_j)$$

It is a common situation that the reward of local government officials (l_j) for performing their functions (e.g. registration of land rights) is a fixed wage and is not dependent on the outcome (moreover on unobservable effort). It could be region specific to adjust for the local cost of labor or could be the same nationwide. The utility of local government officials that performs a specific governance function (e.g. registration) can be expressed in the most general form as $v_j=V(l_j, e_j)$, which is increasing in l_j and decreasing in e_j. As l_j is independent of e_j we face a standard moral hazard problem with an optimal outcome $e_j=0$ (and, thus, the registration transaction cost taken the maximum possible value and U becomes sub-optimal).

As the above principal-agent (PA) problem is structured in a standard way, the solutions to this problem would be also standard: to establish either a franchise contract with local government authorities or to make the reword (l_j) being conditional on the observed regional outcome $\sum_{i=1}^{N_j} x_{ij}$. The problem becomes interesting when one starts considering feasible implementation strategies for such contracts.

Franchising contracts makes the respective government authorities a residual claimant of the better land governance. There are two possible implementations of such contract:

i) *Decentralization* of land governance function (as currently considered in Ukraine), which means that local government receives authority to manage all state and communal land within the respective boundaries of their geographical area, collect land tax and stamp fees and other land transaction revenues as well as other benefits of better land market and better investment climate. While such contract allows resolving the PA problem in relationships between the central and local government authorities, the PA problem persists in the relationships between the local government and the individual government officers. Thus, there is a chance for preserving the lower equilibrium with ej=0 when the individual benefits from corrupted or low quality service provision remain higher than the benefits from the onset behavior. Unavoidably, the contracts of local government officials responsible for land would require modification that makes the reward conditional on the service outcomes (either in a form of bonuses or penalties) lj=L(xj).

ii) *Self sustainable services for land governance* is yet another option for franchising contracts with a functional government authorities. An example of such arrangement was practiced in Georgia between 2010 and 2014. With such arrangement, the functional authority (e.g. registration) becomes a residual claimant for all land transaction and registration fees or other service revenue as well as services provided to other government authorities (e.g. tax administration). Such arrangement provides incentives to the authority to establish performance based contracts with individual officers and to monitor their performance, which makes the operations of government authority similar to business operations.

An important issue that needs to be considered while designing the above contracts is the relative degree of risk averseness of local governments or the functional authority vs. central government.

The performance based contract becomes unavoidable whether we talk about local governments or individual government officers responsible for land governance decision making. Such contract would condition the reward on the observed outcomes for a given area xj (e.g. completeness or currency of registration). Establishment of such contracts would require knowledge of distribution of xij conditional on ej and, thus, access to reliable information on xij, ki, rj, and a proxy for ej is necessary for implementation.

A performance based contract for local authorities may take many different forms. One of them, with a moderate information requirements would be a benchmarking contract, where the benchmark would be either an individual past performance or the performance of "similar" (peer) government authorities or the combination of the two. The peer group may include either the authorities in a close proximity or authorities with similar characteristics of land resources (rj,) (e.g. structure of land ownership and land use, conditions of related markets).

Thus, overcoming the PA problem in land governance unavoidably would require access to regionally disaggregated information on land governance outcomes xij, conditions of land resources and related markets rj, and on distribution of individual characteristics of land owners and land users ki.

Establishment of Land Governance Monitoring System with regular reporting on key indicators at the level of local government authorities can change the contract arrangement in two ways. First, it would allow associating the outcomes for specific local area with activities of specific local authority. In many cases, such performance indicators could come from the sources independent of a particular authority. For example, quality and completeness of cadastral registration (area of responsibility of registration authority) could be characterized with a number of boundary disputes (recorded by a court authority). Second, data on the performance indicators can establish a benchmarking system for performance evaluation for local authorities. Such benchmarks could include previous period outcomes for the same authorities and/or performance of neighboring or similar authorities for the same period. For example, land tax revenue in one district could be comparable to the revenue in the previous period for the same authority or for a similar authority (normalized in per hectare terms).

It is expected, that introduction of the monitoring system and enforcement of new contracts based on performance outcomes could improve the quality of land governance at local and national levels, and increase effectiveness of use of public and private land resources. However, like in many theoretical models, the main question is what would be a feasible design and implementation arrangement for such monitoring system and how to sustain it.

2.1. Design of Land Governance Monitoring System

The primary goal of the monitoring system is to improve transparency and accountability of decision-making at local and national level. It also allows supporting evidence based policy making and keeping track of progress with reform implementation and their evaluation. Besides, better information on the state of local land markets provides for decision making in private sector, improves business climate and investment attractiveness, stimulates effective use of land resources and economic development at local and national levels.

The monitoring system includes a set of indicators that describe key functional areas of land governance (Figure 1). Among such functional areas are:

1. Formal registration of land parcels and related rights;

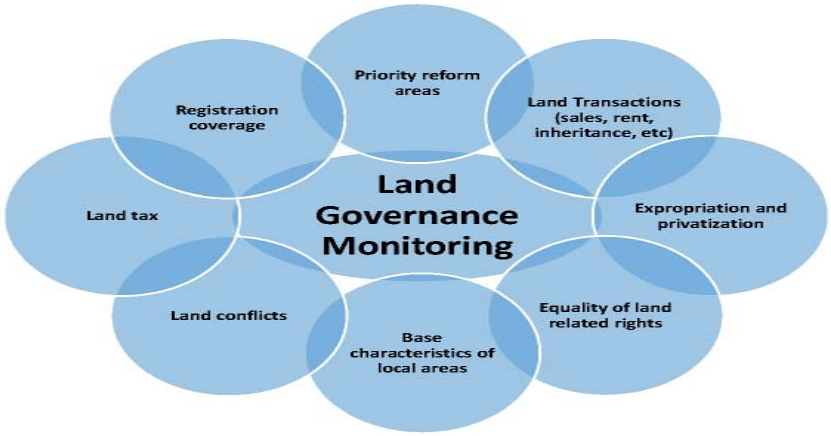
2. Formal land transactions of different types (sales, rent, inheritance, exchange, mortgage, etc);
3. Land tax;
4. Expropriation and privatization;
5. Land-related conflicts;
6. Equality of land related rights and their exercising by women, men, legal entities, national and ethnic minorities, and other potentially vulnerable groups of land owners and users.

Besides the functional areas, the monitoring system may include two additional groups of key indicators:

7. Country priority reform areas (country specific);
8. Base characteristics of local areas (total land area, total number of land parcels, population, distribution of land ownership and land use).

The monitoring indicators for each of the functional areas could be further disaggregated by type of land use (e.g. agricultural/ non-agricultural) and form of property (state, private, communal, collective/ group).

Figure 1 - Structure of land governance monitoring indicators



The motivation and examples of specific indicators for each of the above groups are the following:

1. The formal registration of land parcels and related rights

Proportions of land resources of different ownership types are qualitative characteristics that determine the resource base for economic development and investment attractiveness. In contrast, the share of land that is formally registered by state is a measure of security of property rights and a factor that influences market activity and productivity of land use. Often, communal land without clear demarcation is highly vulnerable to encroachment by powerful outsiders leading to major conflicts. These indicators highlight the importance of land inventory and registration for state/community/public lands and related assets, which in turn is crucial for effective land management.

Indicators included to this group are: the number and area of land parcels (total and by use type and form of ownership), which are formally registered according to the national legislation in the Land Cadaster and/or Registry vs. total area of a relevant local area. The number of primary registrations is an indicator that shows the currency of the cadastral records and refers to previously unregistered parcels, merged and split parcels. Share of formally registered land is both a measure of completeness of administrative records and a quality of formal protection of rights.

Two *Data sources* are required for these indicators. First are the Land Cadaster or Registry data bases on registered parcels, which are used to generate the number of parcels and area of land formally registered for each local district by land use and form of property. Second, as a base for comparison several sources of data can be used. Among them could be results of inventory or a survey (e.g. in Georgia), statistical surveys or reports (e.g. in Ukraine) or results of remote sensing (e.g. in Vietnam). In some countries (e.g. Croatia) completeness of the Cadaster is not an issue, however accessibility of the records and their currency are. For cases like this, other indicators may be more informative. For example, the share of records that were updated during the last 5 years, the share of records entered into the electronic data base or accessible by a central authority, records that are entered into European systems (e.g. ARKOD - System for Registration of Agricultural Parcels).

Reporting Frequency depends on the stage of development and completeness of the cadaster in a particular country. In established and complete systems, annual updates may be sufficient, while in cases where some active reform of land governance is in progress, some more frequent updates may be necessary.

Use for decision making would vary depending on the country priorities and context. Among the examples are the need assessment for inventory and registration of state and communal land, identification of

target areas for interventions related to formal registration, assessment of tax base, assessment of risks of investments in local area, assessment of potential costs of investments, etc.

2. Formal land transactions of different types

The information on transactions indicates how the market reacts to micro- and macroeconomic factors, government programs, etc. These indicators also reveal the market capacity and flexibility, and they are the most sensitive to changes to the quality of land governance. Comparisons by transaction types, land use categories, types of ownership and regions helps to reveal market imperfections that should become a subject to public regulation/ de-regulations or administrative actions. The completeness of public registry affects the quality of such conclusions to a great extent.

Reporting indicators include the quantity of registered market transactions for land (sales, bequests, gifts, mortgages, rentals, exchange) – total number, area, prices and payments (including rental) per ha. The indicators are disaggregated by land use category. Comparison of transactions across geographic areas requires normalization in per hectare or per capita terms.

Data sources include administrative records of State Registrars, Cadasters, Courts, notaries or other authorities responsible for keeping track of land transactions. Accessibility of these records, ability to link them to cadastral records and reliability of information (particularly on price) is one of the biggest challenges in the countries we worked with over the last 3 years. On the other hand, resolving this issues and publishing information on prices makes the biggest breakthrough in terms of transparency of land markets.

Reporting Frequency depends on the frequency of transactions. Monthly reporting would serve the purpose in most of the cases. There are, however, examples when the data on individual transactions is published and could be updated in the real time or quarterly.

Use for decision making would include assessment of market capacity, mass valuation (appraisal) of property, identification of market imperfections and sources of inequality.

3. Land Tax

Taxes on land and other real estate objects, as well as related fees are among the few sources of revenue available to local governments. As actual receipts depend on coverage, assessed values, tax rates and collection efficiency, among other factors, comparison across local areas could provide for a better design of land tax system. Land and property taxes may play an important role in stimulating the productive utilization of resources and sustainable development of rural areas. Such taxes can also foster investment in infrastructure, improvement of land quality and real estate as well as to prevent a non-effective use of land parcels (brownfields and idle property).

Reporting indicators include the number of tax payers, declared area, the revenue and a number of tax exemptions for the different categories of land and land tax.

Data sources for these indicators include relevant administrative records of tax authorities or municipalities. An ability to access the records (including local tax rates) from the central level and institutional capacity to link the tax and cadastral records (e.g. consistent use of cadastral and tax numbers) is a target for institutional development of tax system on its own right.

Reporting Frequency depends on frequency of tax declaration and payment. In most cases annual or semi-annual reporting is sufficient.

Use for decision making would include assessment of the tax gap, design and evaluation of changes in tax system, assessment of elasticities of tax revenue to various intervention, identification of target area for policy and administrative interventions.

4. Expropriation and Privatization

Privatization and expropriation can play both positive and negative role in stimulating economic development. Land acquisition for public purposes with fair compensation is unavoidable to provide public services (e.g. infrastructure) effectively. However, low levels or failure to pay compensation and use of excessive administrative power to acquire land can easily undermine good governance and the respect for due process. In contrast, transparent procedures (e.g. auction), divestiture of public land (e.g. brownfields in urban areas) can be a driver of private sector development and revenue generation for the public sector. Therefore, information about these transactions is an important indicator of the quality of land resource management, it can also indicate possible directions for improvements of the system.

Reporting indicators include the number, area of land parcels by use type that were expropriated (taken, purchased) for public needs and value of compensation paid, and the number and area of land parcels by use type transferred to private ownership (privatized) (separately via auction and free of charge) and relevant revenue.

Data source for these indicators may represent a challenge. While the records on privatization can be maintained by a state land authority, local municipalities, state agency for privatization, records on expropriation may be identified only partially in some contexts. In most cases authorities responsible for decisions on expropriation are well defined (e.g. courts, central government authorities, President of a country). However, many decisions on alienation of private land for the public purposes are made in amicable way via buyouts by municipalities or infrastructure development companies (e.g. rail roads or transportation authorities, project implementation authorities). Thus, identification of sources of information would require some additional investigation in a context of a specific country.

Reporting Frequency depends greatly on data accessibility. In most cases annual reporting is the only option.

Use for decision making would include assessment of risk of expropriation and fairness of payments.

5. The Number of Land-Related Conflicts

A large number of cases in court points to either drawbacks in regulatory and legal environment, or an under-developed conflict resolution system. In both cases reduction in the number of conflicts should coincide with an increase in number of formally registered land plots. Thus, this indicator can be used not only to track changes in the legal and regulatory environment, but also to justify further improvements of the system of State land cadaster and land inventory. It could also indicate the quality of decision-making by local authorities regarding land allocation and other land governance and land management issues.

Reporting indicators include the number of cases, for which there are court disputes filed or pending. The cases could be disaggregated by court authority (administrative, commercial or civil) and type of disputes (boundary, misuse, encroachment, registration of property rights, distribution of land, valuation, payments, etc.) between different categories of participants (individuals, legal entities, government bodies) by state of cases in the dispute process (filed, resolved: granted/declined) and length of the process.

Data sources depend on the specific institutional setting and could include State Court Administration, Ministry of Justice or individual courts.

Reporting Frequency is annual as the number of formal disputes is relatively low in most cases when disaggregated regionally.

Use for decision making would include assessment of reforms and changes in other areas of land governance and targeting local areas. Analysis of frequency of different types of disputes and length of disputes helps to identify the areas where legal and procedural changes are needed. Frequency of disputes is yet another measure of security of rights and quality their protection.

6. Share of land and real estate registered in the State Land Cadastre in women's, men's name or as a joint property and in legal entities' ownership

Although the legislation of most countries has no gender-related limitations for acquisition or use of land parcels (or other assets), the practice of exercising these rights may reveal certain evidences of discrimination. It may be related to some traditional practices of intra-household distribution of rights. Such inequalities may also happen when women or minorities have less negotiation power, access to information (e.g. in native language) or means to protect their rights, which can influence the rental and sale pricing, the number of conflicts, etc. The discrimination may also take place at the stage of divorce or bequest. Therefore, consideration of gender and minority status in land relations and prevention of possible discrimination can have a significant positive impact on the quality of land governance, economic development and human rights protection. Moreover, FAO Voluntary Guidelines, Global Land Indicators Initiative (GLII) and Global Development Goals focus on guarantying equal rights of men and women and other land users.

Reporting indicators include the number of private land plots, total area and prices by use type registered on women's name, men's name or as a joint property, in property of legal entities or minorities.

Identification of the data sources often represent a challenge as too often it is not recorded on the titles or in other records. However, gender indicator may be added as a mandatory field to the registration forms as it was recently done in Georgia or India. As an alternative, a name comparison against the male and female name dictionary can be performed for the registered property. Finally, the registration data may be merged with tax registry or civil status records where gender and nationality is recorded.

Reporting Frequency is annual as this indicator is not likely to change fast.

Use for decision making would include identification of inequalities, design and implementation of legal changes and programs to protect vulnerable groups of land owners or land users.

7. State of Land Reforms

This group of indicators reflects on key reform priorities in each specific country and helps to assess the scope of reforms and keep track of their implementation. As priorities differ from country to country,

the following examples are just for illustration. In case of Georgia, Eastern European countries, such indicators include the number and are of land parcels owned by foreigners. In case of Ukraine, they include the number and prices for renal rights sold via auctions and the number of errors corrected in the State Land Cadaster. Other countries may focus on large-scale land acquisition, land conversion, etc.

The data sources, indicators and reporting frequency would also be country specific.

8. Base characteristics of local areas.

Comparison of the data for reporting units (local areas) of different size requires normalization (e.g., per unit area, per capita) or statistical weighting by size of administrative units.

Reported indicators included into this group are the area and the number of plots (total and by land use and ownership types), population, number of business entities.

Data sources are the State Statistics or National Census authorities (data on population and business entities as well as on land ownership and use). Land inventory, cartographical base (with identification of boundaries) could serve as a source of data on land area and types.

Reporting frequency is annual. However, less frequent updates would also fit the purpose.

2.2. Administrative data

The use of administrative records from government authorities involved with land governance is considered as a feasible strategy for providing regular regionally disaggregated data for the purpose of Monitoring. However, administrative data has some specifics that has to be taken into account at the stage of interpretation of the Monitoring results and features, which can contribute to sustainability of the Monitoring system.

First, completeness and currency of administrative data determines the quality and reliability of the resulted monitoring indicators. For example, if the land cadastre covers only a relatively small share of land, it could not provide a reliable information on land use, distribution of ownership and other characteristics of land. Thus, other sources for such characteristics have to be considered. On the other hand, completeness of the cadaster is an important characteristic of land governance on its own rights and is included as an indicator of quality of protection of land related rights.

Second, the use of administrative data from multiple sources creates mutual benefits to all the agencies involved. It allows assessing gaps and technical errors across the data sets, which cannot be revealed otherwise. For example, joint use of cadastral and tax records helps to verify the currency of information in the cadaster. The cadaster records can improve the tax base. Thus, participation in the monitoring helps authorities to improve the quality of their administrative records and, thus, the quality of their service. However, to fully benefit from such data exchange, the relevant authorities need to upgrade their internal data sharing and error correction procedures. Too often, the government agencies may know about errors but do not have rights, a functional responsibility or procedures to correct them. For example, the area of land parcel recorded during a transaction may not coincide with cadastral records. But, verification and correction may be initiated only by the owner.

Third, administrative data have several important benefits in comparison to alternative sources of information that can be used to create the indicators and sustain the monitoring system. Among them are:

- *Low cost of data collection* – government authorities collect and store the administrative records as a part of their regular operations. Thus, only some small initial investments are needed to develop a reporting software that would generate the reporting indicators out of records with a pre-designed frequency or on demand.
- Promptness – administrative data requires minimum processing, allows construction and publication of monitoring indicators on a regular base with virtually no delay after the reporting period;
- *Regular update of information* – as the reporting software were developed, the reporting can be done with any frequency. The option for generation of retrospective values is also feasible;
- *Accuracy of information* – the authorities keep records on the universe of formal transactions, land parcels and other relevant objects. Thus, selection is not an issue for producing characteristics of formal side of the land governance. Also, the authorities are interested in and have responsibilities for having their records accurate and they employ different quality control and back up practices; they should be interested to address any known gaps in data as well.

Fourth, there are some common challenges of working with administrative data that need to be anticipated and addresses with normative acts and procedures. Among them are the rigidity of current software (property and access rights, formally approved procedures, etc.) which does not have functionality for generating necessary statistics out of data and does not provide access to the raw data. Another challenge is the lack of common standards among the authorities in terms of definition of land use and land cover types, boundaries of reporting areas, etc. Finally, some administrative data (or a part

of it) are yet stored in hard copies only (or in form of scanned copies). Resolving these issues is often time consuming and require solutions tailored to each specific case. However, the solutions do provide for not only the monitoring function, but they also help to improve the overall quality of government services in the field of land governance.

2.3. Motivation for implementation of Land Governance Monitoring

Besides the theoretical and strategic benefits of more transparent and more efficient governance of land resources, establishment of the monitoring system can bring several short-term tangible benefits to different groups of stakeholders. Central government authorities and policy makers can use the information on monitoring indicators as an evidence base for their decision making, policy design, monitoring and evaluation of reforms, programs and policies, need assessment for public intervention. Authorities responsible for delivering public services receive a tool that helps to reveal errors, improve coverage, assess the gaps in delivering of the relevant services. They also can monitor and assess performance of various local branches and service centers to identify the best practices and targets for improvements. Private sector receives a source of information necessary for risk assessment, valuation and planning in all industries where land is used as an important production factor. Finally, land owners, public activists and media can rely on publicly available monitoring results to understand the impact of various government decisions on wellbeing, to assess the performance of elected local authorities or to set agenda for improvements on local level.

There are also groups of stakeholders that would face losses because of better availability of information on land, and, thus, would oppose the introduction of monitoring. To this group would belong the local and central authorities involved in non-transparent management of state and communal land. The land users, which currently enjoy a monopolistic market power on the local markets and producers that use land informally would likely to oppose the introduction of the monitoring too as better information and higher competition will likely to reduce their rent on non-transparent use of land.

However, the most important motivation and factor of success for the monitoring system is the support from top government authorities, which coordinate land reform activities among different functional areas of land governance. Three factors may play a role in supporting the introduction of land Governance monitoring. These are political agenda (if transparent land governance is already a part of priorities), legal requirements (if monitoring is stipulated by law as for example in Columbia and Vietnam), and development projects by various international donors (for example, the World Bank supports pre-project or relevant implementation activities in Georgia, Ukraine, India, Croatia, Peru, Philippines, Rwanda).

The motivation of various stakeholder groups is taken into account when institutional and implementation arrangement is developed for introduction of the monitoring system.

2.4. Dissemination mechanisms

The degree to which the benefits of the Monitoring system can be realized by different stakeholder groups depends on the dissemination channels for the monitoring results. Online publications of the regionally disaggregated data would fit this purpose only partially. In addition to that, supplementary products such as regional rankings, benchmarking, policy briefs on the selected topics would help to communicate the results to the relevant audience. However, one of the most important dissemination tool would be the distribution of the local area profiles, which would make the results of the local authorities' practices perfectly observable and comparable with other peers and over time. The local landowners and land users should be aware of such profile and monitor the performance of the local authorities.

2.5. Institutional arrangement

As it follows from the motivation of different interest groups, a successful implementation of the monitoring system requires arrangements at three different levels: policy, coordination and technical implementation.

Policy level includes establishing a policy agenda where increasing transparency of land governance is included as a priority. The key players in this process could be the reform-oriented government or political parties representing interests of landowners. International organizations and donors could be instrumental in this process by providing financial support for initial investments and methodological help. However, without political support and political leader, the process of improving transparency of land governance and implementation of the monitoring is not feasible.

Coordination of development and implementation activities among the key government authorities involved with the land governance is an important factor of success. Such coordination could be done in form of a land reform steering committee or other body, which includes top decision makers from the relevant government authorities (e.g. Land Cadaster, Ministry of Justice, Tax Authority, Ministry of Agriculture, Ministry of Regional Development, Ministry of Land and Natural resources). The primary

task of such coordination body is to agree on the need for the joint work to establish the monitoring system in order to achieve a political goal or a legal requirement for better transparency of land governance. The members of this coordination body would also authorize the relevant departments to engaged into development and implementation work, and to authorize the information sharing for the purpose of monitoring.

Technical implementation or a working group would include technical experts from the relevant government institutions that are in charge for management of administrative records. The tasks of this group include organization and implementation of data exchange and data processing, development and testing relevant procedures and methodology. At the implementation stage, the experts from this group would also organize and supervise development of software that generates monitoring indicators out of administrative records.

In terms of institutional arrangement, there is also a need for a task force, which would actually do all the day-to-day development and coordination work across the institutional levels and among the government authorities.

The effective institutional arrangement is a key element of successful implementation of the monitoring system. The case of Ukraine demonstrates an example of such arrangement and illustrates some first implementation results.

3. Case of Ukraine: indicators, sources and results

Different elements of the land governance monitoring can be found in many countries and are implemented by several authorities as a part of their regular duties. For example, most of the land cadasters publish regular information on the total number of registrations, extracts or complaints. Similarly, information on land transaction and prices are often available to the public at regional level and at a level of individual transactions. The case of Ukraine, however, is informative as it represents an example of successful institutional arrangement for a comprehensive monitoring system based on administrative records from six different government authorities and where synergy effect from linking the data from different sources is observed. This system produces all monitoring indicators consistently for all rayons (districts) and cities of Ukraine. So far, Ukraine represents the first case where such comprehensive system is established and where the benefits of improved transparency can be expected in a near term.

3.1. Timeline and institutional arrangement

Development of the Land Governance Monitoring System in Ukraine started in 2015 with a coincidence of several events. After the Parliamentary election in the fall of 2014, a new pro-reform government was formed, and land reform was included as one of the reform priorities. It followed by a development of Comprehensive Strategy for Agricultural Development 2015-20 by the Ministry of Agrarian Policy and Food of Ukraine (MoA) and experts from private sector and professional associations. This strategy has established a clear set of priorities for land reform and was supported by the National Reform Council. Monitoring of land governance was included to this strategy as a necessary condition for transparency and accountability of the land reform.

At the same time, the World Bank has established a new project to support the government and to upgrade the government's capacity for evidence-based policy making in area of agriculture and governance of land resources. The project has provided methodology and implementation support for establishment of the Monitoring system. To coordinate the Project's efforts, the MoA has established a Steering Committee, which includes representatives of six central government authorities at a level of Deputy Ministers, Members of Parliament, representatives of professional associations and international organizations. The Steering Committee supervised the progress with development of the Monitoring system and made some key decisions regarding the distribution of functional responsibilities among the government authorities with respect to Monitoring. Its functions also include a review of normative acts related to the land governance monitoring that were proposed to the Cabinet of Ministers and other central government authorities.

The MoA has also established a Monitoring Working Group, which included technical experts from the government authorities involved with land governance and maintenance of administrative records. The responsibilities of the working group include organization of data supply, development of methodology, coordination of joint implementation work, liaison with corresponding government authority, interpretation of the monitoring results, feedback and administrative actions.

Establishment of the working group marked a start for the pilot implementation of Land Governance Monitoring system in Ukraine. The pilot implementation took about eight months, from April to December of 2015, and included development of monitoring indicators, identification of the data sources, sample data collection, data cleaning and construction of the sample monitoring indicators for the period 2013-2015. The pilot implementation has also identified gaps in existing administrative data in terms of data quality, availability and data collection procedures, and suggest approaches for bridging some of these gaps. The pilot implementation resulted in the following outputs:

- The first set of monitoring indicators for 2013-2015 at rayon (district) level were published online on

the Project web site (land.kse.org.ua). This data establishes a base-line for designing and monitoring further land reform and for development of the monitoring system;

- A yearbook "Land Governance Monitoring 2014-2015" was presented to the stakeholders and published online. It provided a description of the monitoring result to the expert community and policy makers;
- Normative acts for establishing the Monitoring system and methodology ware drafted as well as the terms of reference for monitoring software.

Currently, a permanent automated system of land governance monitoring is at a stage of development and implementation. It is expected that the fully operational system can be established within six months after adopting the necessary normative acts. Besides the above outputs, the system would also generate maps and charts, local area profiles, and a list of detected errors in administrative data.

3.2. Sources of data

During the pilot implementation, the administrative data on land parcels, related rights, land tax and other functional areas of land governance was provided by the following state authorities at the level of rayons and cities of Ukraine:

- State Service of Ukraine for Geodesy, Cartography and Cadastre (2014-2015);
- Ministry of Justice of Ukraine (provided by the "National Information Systems" State Company) (2013-2015);
- State Fiscal Service of Ukraine (2015);
- State Court Administration of Ukraine (2013-2014);
- State Statistics Service of Ukraine (2011-2015); and
- State Water Resources Agency of Ukraine (2014).

Based on these data sources, more than 140 indicators for land governance performance were constructed. However, some areas and time periods were not covered as the data was unavailable during the pilot implementation. In particular, the gender of landowners and data on expropriation remained non-accessible. Some examples of the monitoring results are provided below.

3.3. Pilot results

Administrative structure

The territory of Ukraine is 60.3 mln ha and includes 27 primary administrative units (of national subordination): 24 regions (oblast), the Autonomous Republic of Crimea, cities of Kyiv and Sevastopol[2]. These units are further subdivided into the secondary administrative units: rural rayons (districts) and cities of regional subordination. There are 490 rayons and 182 cities, which are the units of reporting for the Monitoring system. These units have elected local governments (councils), and most of the public (government) cervices have local branches (service delivery units) at this level (e.g. Fiscal Service, State Geocadastre, Courts). Thus, most of the decisions on governance of land resources are made at this level and the administrative reports (besides those generated from a parcel level data bases) are available at rayon/city level and higher levels. The average size of rayon is 119,530 ha (ranging from 30,874 ha to 361,615 ha) while the cities occupy on average 10,000 ha (ranging from 202 ha to 86,400 ha). The average population of rayon is 41,226 and of city is 143,333 people. As basic characteristics, land prices, land use and quality of land governance are different between rural rayons and cities, most of the descriptive analysis of the monitoring results is presented separately for cities and rayons.

There are also administrative units below rayon/city level. These are village councils and urban rayon councils. There are 10,798 of such units. There are also 29,772 settlements (villages, towns, cities) in Ukraine. As one of the monitoring indicators, the System reports on the number of village councils and settlements with clearly established and formally registered boundaries. The monitoring reports that only 50 such units have registered boundaries as of 2015. Undefined formal boundaries was a reason for boundary conflicts in several areas. The unclear situation with boundaries and the fact that Ukraine is currently going through an administrative reform (village councils are aggregated into larger units) were the reasons for selection of rayons and cities as the primary reporting units for the Monitoring system.

Main characteristics of rayons and cities of Ukraine

The Monitoring system includes both, the indicators on the functional areas of land governance and some basic characteristics of the reporting units. Table 1 present some of these characteristics to illustrate the diversity of property distribution and land use structure.

[2] Since March 2014, the City of Sevastopol and Crimea Autonomous Republic are temporary occupied by Russian Federation and several districts of Donetsk and Lugansk region are regulated by regime of anti-terrorist operation and information on these regions may be unavailable.

Table 1 - Main characteristics of rayons and cities of Ukraine, 2014

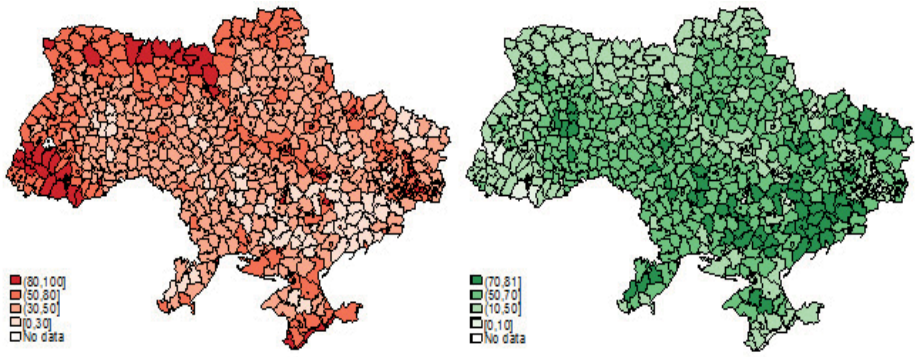
	Total	West	East	North	South	West	East	North	South
		Rayon				City			
Population per ha[a]	**0.7**	0.5	0.3	0.3	0.3	16.6	23.3	21.0	17.1
Agricultural land[b], %	**68.7**	58.6	78.5	70.6	77.4	26.1	39.8	27.0	26.0
Developed land[b], %	**4.2**	3.4	3.4	3.3	2.9	34.4	37.9	44.8	25.4
State owned[b], %	**47.9**	56.5	38.4	47.4	40.1	82.6	76.0	81.3	83.0
Privately owned[b], %	**52.1**	43.8	61.3	52.5	59.8	16.4	23.2	18.3	12.5
Average size of private plot[b], ha	**2.4**	1.3	3.5	2.3	3.4	0.7	1.0	0.2	1.2
Average size of state owned plot[b], ha	**10.1**	13.3	7.6	10.1	9.0	2.3	2.7	3.9	2.6
Average farm size[a], ha	**481.7**	318.1	643.5	706.2	300.9	132.8	803.0	1111.3	266.8

Data: a) State Statistics Service; b) State Service of Ukraine for Geodesy, Cartography and Cadastre

The primary land use in rural rayons is agriculture, which occupies about 70% of total rayon area with some regional variation. Less agricultural land is available in Western part of Ukraine as about 30% of rayons in this part of the country are covered with forests. The largest share of land used for agriculture is in the Eastern part. Cities have on average 32% of land used for agriculture as many cities include into their administrative boundaries also adjacent villages and village councils. About 35% of the territory of cities is developed and the rest of city territory is covered with water and forests. Only 3.3% of rural rayons territory is developed. A small share of territory is classified as mountainous areas (Crimean and Carpathian mountains), desert (in Kherson oblast) or swamps (in Northern part).

About 52% of land in Ukraine is privately owned with private ownership being lower in urban area (19% on average). State owns 47.87% of the land (of them 10 mln ha is agricultural land). The rest of land is in communal property. The share of state property in rural rayons ranges from 94.7% (primarily in mountainous and forested areas) to 19.6% (see Map 1). In cities, this range is from 99.1% to 36.9. The management of state land is a responsibility of various state enterprises and ministries. Most of agricultural land is managed by the State Service for Geodesy, Cartography and Cadaster. It has to be mentioned, that Ukraine started a process of transferring land within the boundaries of settlements from state to the communal property. However, the formal registration of this new communal property is incomplete. The monitoring will be able to show the progress with this process. Also, a reform related to state ownership of agricultural land is in a process of design and is likely to start in 2017. It is anticipated that a part of state agricultural land will be transferred to communal property while another part will be privatized via auctions. The monitoring system will help to keep track of implementation of this reform and to evaluate its effect on productivity, prices and investments.

Map 1 - The share of land area of the state (left) and private (right) form of ownership by rayons, 2014



Ukraine is a large agricultural producer and exporter. There are 52,543 agricultural producers (State Statistics 2015). Of them, 44,968 commercial producers are involved with cultivation of land (total area of cultivated land is 21.5 mln ha in 2014). The rest of private agricultural land is cultivated by individual owners. The average size of a commercial farm in Ukraine is 481.7 ha. The farms are larger on average in Eastern and Northern parts of the country (643.5 ha and 706.2 ha respectively).

A specific of Ukrainian farmland market is that a ban to sale agricultural land (Moratorium) was established in 2001. As a result, rent is the primary mode for transferring use rights and more than 4.6 mln rental agreements for about 16.6 mln ha of private land are signed as of 2015. Such a large number of rental agreement is a result of land distribution during the privatization of 1990s. During this process, 27.72 mln ha of agricultural land of former collective enterprises was equally distributed among 6.91 mln of employees of these enterprises. As a result, an average enterprise has to sign and maintain about 130 (primarily short term) rental agreements which imposes a significant transaction cost and puts a downward pressure on the size of rental payments.

Lifting the Moratorium is considered as one of the top priorities for the land reform in Ukraine. Land Governance Monitoring System will help to demonstrate the progress with opening up of the sales market and its impact on land consolidation, number and prices of rental agreements as well as other characteristics of land governance.

The quality of land governance is also associated with a cost of land transactions and security of land related rights and is the primary focus area of the monitoring.

4. State of land governance in Ukraine, 2014-2015

As it was mentioned above, access to information on the state of land governance at the level of decision making is a necessary condition for overcoming the moral hazard problem in relationships between central and local government and between the individual bureaucrats and government authorities. To address this issue, the monitoring system includes a large number of indicators on six functional areas of land governance. Each of these areas contains one or two aggregated indicators, which are presented in Table 2.

Table 2 - State of Land Governance, 2014-2015

	Total	West	East	North	South	West	East	North	South
		Rayon				City			
Registered in the Land Cadaster - private, %	**70.9**	64.5	72.7	73.3	74.2	81.1	74.3	81.9	85.9
Registered in the Land Cadaster - state, %	**24.0**	18.8	31.4	23.5	25.9	15.5	28.1	11.6	26.0
Number of rental agreements per 000 landowners	**40.8**	41.3	37.2	56.1	30.7	1.3	2.8	1.2	0.4
Number of non-rental transactions per 000 landowners	**1.2**	1.1	0.5	2.0	1.2	0.5	0.3	0.9	1.0
Number of sales per 000 landowners	**0.1**	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.7
Number of exchanges per 000 landowners	**0.1**	0.1	0.1	0.2	0.04	0.1	0.03	0.1	0.1
Number of inheritance per 000 landowners	**1.0**	1.0	0.3	1.6	1.0	0.2	0.1	0.6	0.2
Tax by Individual taxpayers per ha of private land	**36.3**	8.9	9.7	7.5	12.6	346.3	2,129.9	2,114.5	1,653.6
Tax by Corporate taxpayers per ha of private land	**458.1**	27.5	21.4	25.2	14.7	6,859.3	19,546.2	32,039.8	40,330.0
Administrative court cases per 000 landowners	**0.05**	0.06	0.03	0.05	0.05	0.38	0.01	0.13	0.02
Civil court cases per 000 landowners	**0.4**	0.3	0.5	0.4	0.4	0.6	0.03	0.3	0.1
Use of privatization rights, %	**87.9**	92.7	78.1	94.5	82.7	93.7	73.9	91.4	76.1
State of land governance, average rank	-	**289.8**	**372.1**	**200.6**	**310.2**	**251.5**	**243.7**	**226.7**	**167.3**

4.1. Completeness of formal registration

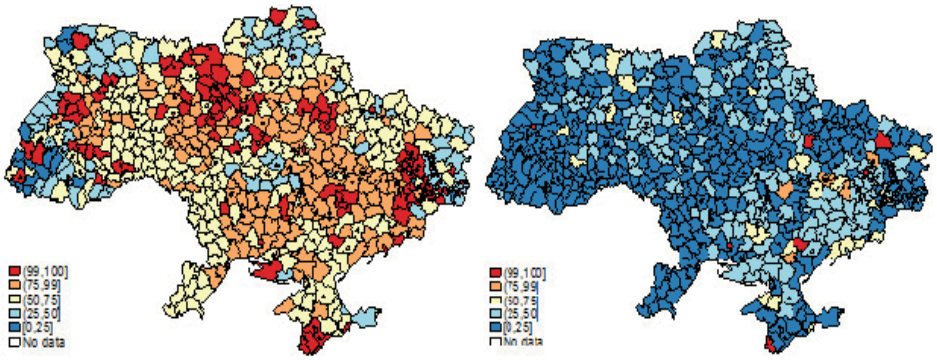
Formal state registration of land plots and related rights is an important institution for protecting rights of owners, users and other stakeholders. There are two institutions in Ukraine performing the registration function. The State Service of Ukraine for Geodesy, Cartography and Cadastre is responsible for management of State Land Cadaster, which contain records of physical characteristics of land plots (geographic coordinates of boundaries, area, designated land use, etc.). All rights and encumbrances, related to these parcels, are registered by the State Registry of Rights for Immobile Property administered by the Ministry of Justice of Ukraine. Completeness and currency of the Land Cadastre and Registry is a characteristics of quality of protection of land rights.

As of December 1, 2015, there were 16,661,051 plots registered in the State Land Cadastre with a total area of 41,812,127.76 hectares, representing 69% of Ukraine's territory. However, the completeness of registration is different across the forms of property and geography. There was only 24.0% of state-owned land registered in the Cadaster, while the completeness of registration of private property is 70.9% (Table 2). The level of registration of private property is higher in cities (average for cities is 79.9% vs 70.6% for rayons). The completeness of registration of private property for rural rayons ranges from 7.8% to 98.7%. For cities, this range is from 21.0% to 99.6% (Map 2, left panel). For state property these ranges are from 0.03% to 95.2% and from 0.35% to 88.8% correspondingly (Map 2, right panel). In several rayons, the area of registered land turned out to be above the total area of land of corresponding form of property. Such cases were reported to the administrators of relevant data sets and were top coded for further analysis.

The difference in the level of registration between the state and private land points to a significantly lower level of protection of ownership rights of state, which provides opportunities for land grabbing and other forms for poor land management. Better contractual arrangements (e.g. benchmarking) for land registration and governance of state land can bring significant benefits to Ukraine.

The total number of registrations of land rights in the State Register as of September 2015 is 3,485,630, which corresponds to 20.9% of the land plots registered in the Cadaster with significant regional variation in terms of coverage.

Map 2 - Share of land registered in the State Cadaster in private (left) and state (right) property.



The observed spatial variation in formal registration coverage demonstrates that despite the common legal environment, rayon specific factors play a significant role in determining the level of protection of property rights. Among such factors could be professional skills and motivation of the registration personal, awareness of land owners, level of corruption, commitment of the local government to improve the governance of land resources, value of land. Most of these factors are non-observable to central government and local landowners. Thus, publication of the monitoring indicators on cadastral and registry registrations would provide the information for comparison across time periods and with neighboring or similar communities. Such information can be used by central government authorities to assess the performance of local personnel and by local activists, media and politicians and makes the local registration authorities accountable for their performance.

Improvements in registration coverage bring several important benefits to local governments, landowners, and land users. It is safer, faster and easier to transact (including renting) the parcels, which are already registered. With lower transaction costs, local markets become more active, which increases sales and rental price for land. As the registered parcels establish a tax base for land tax and single tax for agricultural producers, local governments are the direct beneficiaries of more complete tax base.

4.2. Transactions

The total number of transactions with the change of the owner or user of land that are formally registered by the State Registry varies between 2,167 in the first quarter to 2013 to 208,735 in the fourth 2014 (Figure 2).

Figure 2 - Total number of transactions with the change of land ownership\user in Ukraine, 2013 - 3rd quarter 2015

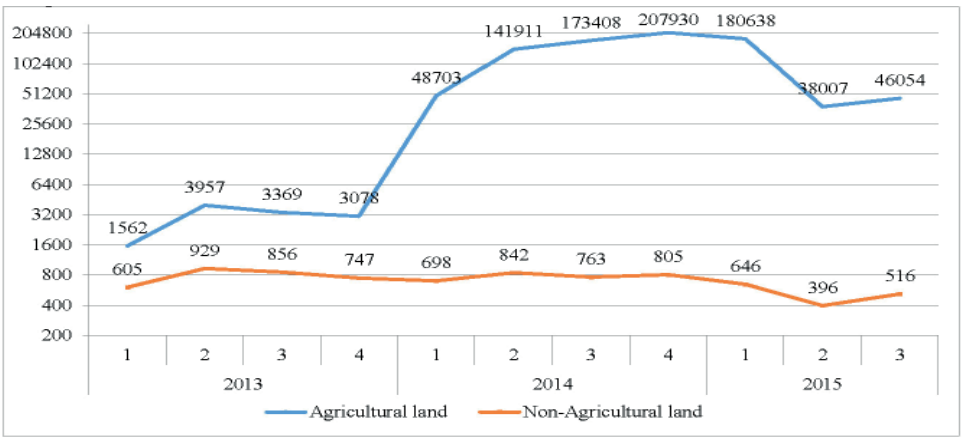
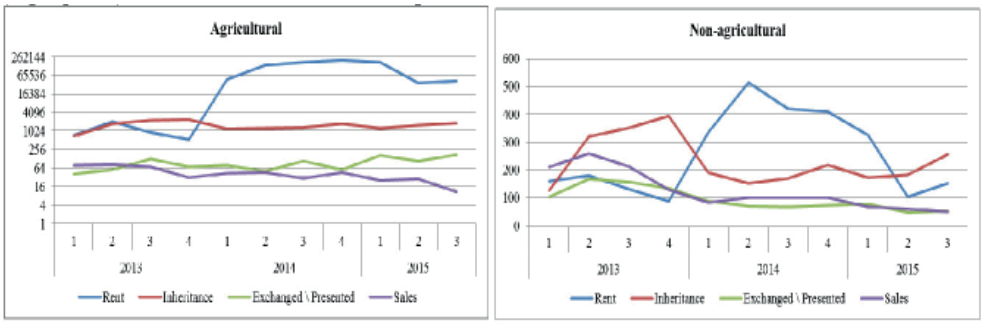


Figure 3 - Number of transactions of different types for agricultural (left panel) and non-agricultural (right panel) land in Ukraine, 2013 - 3rd quarter 2015

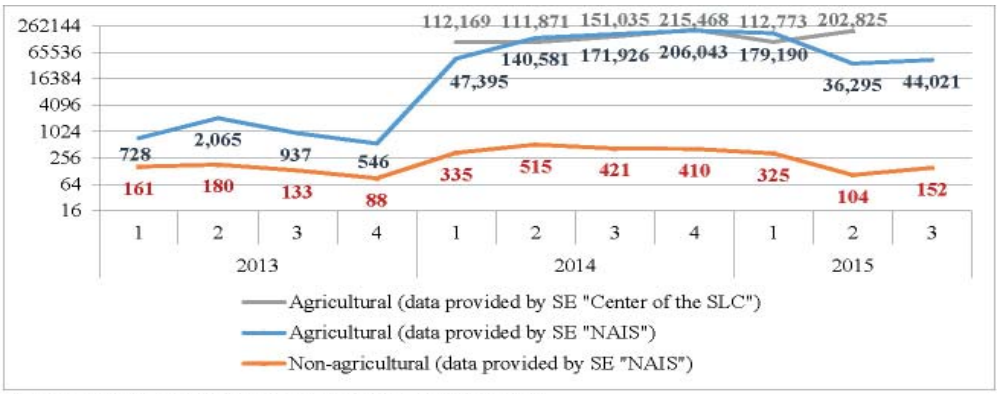


Most of these transactions are the rent of agricultural land (Figure 3). The second type of transactions in terms of frequency is inheritance. There were 1,077 land sales in 2013, 560 in 2014, and 262 during the first three quarters of 2015 with corresponding total area of 2,943.49 ha, 177.38 ha and 3,094.89 ha. The very small number of sales (total area of private land is 31.4 mln ha) points to significant barriers on the sales market for land. While for agricultural land the main barrier is Moratorium for sales, for non-agricultural land the reason is different. Comparison of the number of sales with the number of mortgages indicates that mortgages almost not used in Ukraine, which may be the primary reason for slow development of the land sales market in the country. In 2013, there were 19 mortgages for total area of 7.69 ha; in 2014, these were 58 mortgages for 42.03 ha; there were 14 mortgages for 3.24 ha during the first three quarters of 2015. In other countries the number of sales ranges from 0.5% to 3% of the number of property per year and mortgages are the main source of funding.

In the absence of sales market for agricultural land in Ukraine, rent became the primary type of land transfers. As of 01.07.2015, about 4,671.5 thousand rental contracts for private agricultural land (shares of privatized state farms) were signed in Ukraine for the total area of 16,597.0 thousand hectares (43% of privately owned land). During 2013-2015, transfer of use (rental) rights were registered for 832,551 land plots with total area of 3.5 mln ha (about 16% of land under rental

agreements) (Figure 4). The average rent payment was 786 UAH/ha per year in 2015. Also, 56,053 rental contracts for state-owned land were established with an average rental payment of 1351.6 UAH/ha per year with a significant difference in rental price across the regions.

Figure 4 - Number of registered rental agreements



Data: Center of State Land Cadastre and SE "NAIS" (Registry)

The variation in the number of formal transactions across time periods is related to several policy changes and, thus, the monitoring results can be used for evaluation of such policy effects on various land governance characteristics. For example, in the first quarter of 2015, new restriction on the minimum term of rental contracts for agricultural land was imposed, which coincides with a drop of formal registration of rental agreements from 179 thousand cases in the 1st quarter of 2015 to only 36 thousand in the 2nd quarter 2015. This change is unrelated to seasonality (as no such change was observed before).

For comparison across regions, the number of transactions is weighted by the number of landowners. Table 2 demonstrates that except for rental agreements, number of transactions is distributed relatively universally across the regions. However, if compared across rayons some outliers can be identifies. Such outliers would require a closer analysis and targeted inspection as they may reflect technical errors, cases of best practice or wrongdoing.

4.3. Land tax

The land tax in Ukraine is a local tax paid by land owners and land users (individual and corporate). Starting 2015, the rate of tax and tax exemptions are determined by local councils based on normative value of land. The total amount of land tax collected in 2015 was 3,651 mln. UAH, of which 86% were paid by corporate tax payers. About 70% of land tax revenue was collected in cities (reflecting difference in value of land). For some rural rayons, however, land tax constitute more than 80% of local budget revenue. Thus, improvements in administration of land tax would make a significant contribution to self-sufficiency and independence of local governments.

In 2015, the were 7,826,787 land tax payers, among them 98.5% were individuals (the rest are corporate). This number represents 46% of the total number of landowners, registered by the State Land Cadastre, which points to some significant tax gap.

This statistic does not reflect the payments of single agricultural tax (which includes land tax payment) as the data was not available.

Example of land tax is a good illustration of how closely different areas of land governance are interlinked and how the monitoring results can be used for analysis of land tax. Table 3 presents the regression

results for relationship between the tax revenue per hectare of private land, and completeness of cadastral registration controlling for characteristics of local land resources (distribution of land use, forms of property and oblast fixed effect – for more details see Annex 1). The results show that an increase in registration coverage of private land by 10 percentage points would correspond to about 1% increase in average tax revenue per hectare in cities for both individual and corporate tax payers corresponding respectively to 15 and 243 additional UAH per hectare of private land. These benefit outweigh the registration cost many times meaning that local government would have a net gain if they invest in better registration of private land. Expectedly, the registration of state land does not affect land tax. Thus, a privatization of state land via open and transparent auctions may benefit local communities in a short (via sales revenue) and long run (via tax revenue).

Table 3 - Link between the formal land registration and land tax revenue

	Tax per ha of private land paid by			
	Corporate		Individuals	
	In cities	In rayons	In cities	In rayons
	(1)	(2)	(3)	(4)
Share of **private** land registered in Cadaster, %	0.016*	0.002	0.011*	0.001
	(0.008)	(0.002)	(0.006)	(0.002)
Share of **state** land registered in Cadaster, %	0.009	-0.003	0.009	-0.002
	(0.007)	(0.003)	(0.007)	(0.002)
Other controls	yes	yes	yes	yes
Obs	110	436	110	435
R^2	0.806	0.646	0.825	0.575

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; oblast FE are controlled for. Details in Annex 1.

4.4. Other indicators

The Monitoring system includes indicators on other areas of land governance. Some of them are presented as examples in Table 2 (disputes, privatization). The diversity of indicators opens opportunity for detailed analysis of land governance and for development of policy recommendations to improve security of land rights and land transferability. More importantly, availability of detailed regionally disaggregated information provides an opportunity for design of better contractual arrangements with local authorities for delivery of land governance functions. The monitoring indicators could serve as a measure of performance as well as benchmarks in such contracts.

4.5. Ranking of Land Governance

By its nature, land governance includes activities and decisions that target multiple objectives. Thus, assessment of land governance should incorporate all these different objectives and have tool for a simple instrument for comparison of the quality of land governance across the administrative units.

There is a large literature on operational research and in several other field that provide various tools for multi-objective assessment. Ranking is one of the simplest tools that allows aggregate performance along multiple dimensions into a simple index. Below, we demonstrate how the monitoring results can be used for comparison of quality of land governance across administrative units. Such comparison is necessary when performance of neighboring communities or other peer groups is used as a benchmark for assessment the quality of land governance in a given administrative unit.

Ranking represents a position (rank) of a specific city or rayon in comparison to the rest of administrative units in a range from the first (the best value of a specific indicator) to the last with the lowest value for a particular indicator of land governance (e.g. tax revenue per hectare). Ranking for each individual indicator can be combined into an aggregate ranking of land governance. Such ranking is proposed to assess the quality of land governance for each rayon and city of Ukraine. It is based on monitoring results for 2013-2015. One or two indicators were selected to represent each functional area of land governance. A rank of rayon/city was calculated for all of the indicators separately. To assess the total rank, an average across all functional areas was taken. This approach effectively provides equal weight for each functional area as there is no theoretical ground to set priorities among the functional areas differently. In case two sub-indicators represented a functional area (e.g. share of registered state and private land), an average of the two ranks was used to represent the functional area in the final computation. The distribution of weights among the sub-indicators can potentially be adjusted to the share of the sub-components in the total (e.g. share of private vs state land). However, such adjustment may unnecessary complicate the practical implementation of the ranking. The following indicators are used for five functional areas:

1. Share of land registered in the State Land Cadaster (50% of weight is given for registration of private and 50% for registration of state land);
2. Number of transactions per thousand landowners (50% - rental agreements (change of land user) and 50% - other transactions with change of ownership: sales, inheritance, exchange);
3. Land Tax paid per ha of private land;
4. Share of individuals, who claimed their privatization rights for land;

5. Number of court cases related to land per thousand landowners (50% - in Administrative courts and 50% - in Civil courts).

The ranking was performed for all sub-regional administrative units of Ukraine, Map 2. In case several administrative units have the same value of indicator, they receive the same rank, that correspond the highest rank in the group (standard competition ranking). The presentation of results, however, is done separately for cities and rayons (Table 2). The Autonomous Republic of Crimea, Donetsk and Lukhansk regions are excluded from ranking as mentioned above, thus, the lowest rank is 557, which corresponds to the number of cities and rayons used for establishing the ranking.

For example, Barskiy rayon of Vinnitsa oblast has 12.46% of state land registered in the Land Cadaster and 70.56% of registered private land. It is ranked respectively 354 and 294 among cities and rayons participated in ranking (Table 4). As Indicator 1 "Share of land registered in the State Land Cadaster" includes two sub-indicators, the average of them is 324 and is included in computation of the overall ranking. Ranking for other functional areas of land governance are performed similarly and their total equals to 1363. As the sum of ranks gets larger, the overall position of rayon or city in terms of quality of land governance is getting lower. The overall rank for Barskiy rayon is 293. Dubenskiy rayon of Rivne oblast is in the first palace.

Table 4 - Calculation of ranking for state of land governance: case of Barskiy rayon of Vinnitsa oblast, 2015

Monitoring indicator	Sub-indicator	Value of indicator	Rank
1.Share of land registered in the State Land Cadaster, %	State	12.46	354
	Private	70.56	294
2. Number of transactions per thousand landowners	Rental (change of user)	43.89	201
	Change of owner	0.07	367
3. Land Tax paid per ha of private land, UAH/ha	-	43.02	179
4. Share of individuals, who claimed their privatization rights for land, %	-	91.03	337
5. Number of court cases related to land per thousand landowners	Civil	0.22	218
	Administrative	0.04	260
Sum of ranks			***1363***
Overall rank of land governance			***293***

There are also 8 administrative units with missing data for one or more indicators used for ranking. One of such units is the city of Prypiat', which is de-populated after Chernobyl nuclear disaster. This observation is excluded from ranking. The rest of missing data was replaced with average values for respective oblast rayon/city clusters.

Comparison between the cities and rayons shows that there is a statistically significant difference in terms of the ranking and across the regions. The oblasts with the highest average rank is Zaporizhzha (average rank across rayons and cities is 88), Rivne (103) and Poltava (average rank is 104). The lowest rank is in Kharkiv (466), Zakarpatska (461) and Odessa (447) and oblasts. The lowest and highest ranks for individual cities and rayons is presented in Table 5.

Map 3 - Rank of land governance at local level

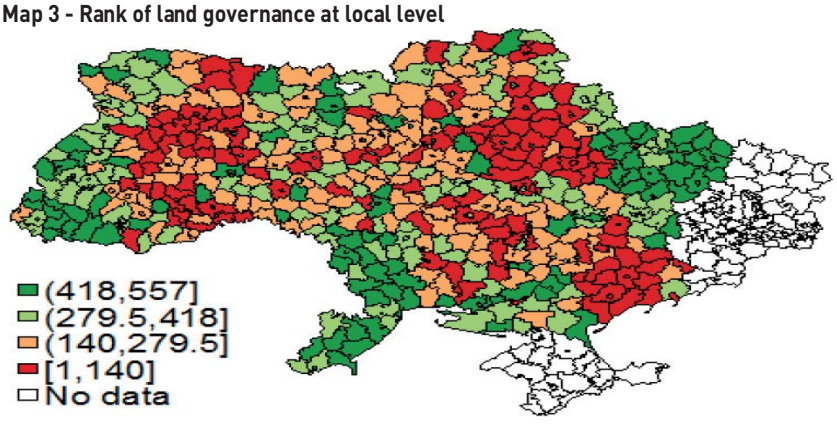


Table 5 - Ranking of land governance for selected rayons and cities

	Top ranking	Lowest ranking
Cities	(12) Znamianka, Kirovograd oblast (17,5) Kalush, Ivano-Frankivsk oblast (23) Polrava, Poltava oblast	(555) Bucha, Kyiv oblast (556) Kotovsk, Odessa oblast (557) Bilgorod-Dnistrovskiy, Odessa oblast
Rayons	(1) Dubenetskiy, Rivne oblast (2) Grebinkivskiy, Poltava oblast (3) Karlivskiy, Poltava oblast	(547) Irshavskiy, Zakarpatska oblast (549) Velykolepetyskiy, Kherson oblast (553) Dvorichanskiy, Kharkivska oblast

As demonstrated, the ranking provides a simple measure of relative position of the land governance at the local level and can show if improvements takes place over time. The potential users of the ranking results include policy makers, government administrators, land owners, land users, journalists and general public.

4.6. Benchmarking

The ranking, presented above, can be a useful tool for the overall comparison. However, for practical recommendations how to improve the ranking and for establishing contracts with local governments, the ranking can be complimented with clear benchmarks for overall performance and for each component and sub-component as presented below.

Figure 5 presents a graphical comparison of ranking for Barskiy rayon (Vinnitsa oblast) along each of the ranking sub-indicators with average performance of two peer groups for this rayon: its immediate neighbors and all rayons and cities in Vinnitsa oblast. We can see that Barskiy rayon outperforms its neighbors in terms of registration of private land and land tax revenue. In terms of registration of state land and the number of transactions with change of ownership, the rayon is significantly below its peers. Thus, efforts for improvements in land governance in Barskiy rayon should target better registration of state land (e.g. by allocating the budget for land registration, bringing state land to the auctions with registration of land parcels as a part of auction preparation procedure). In terms of establishing the performance indicator, Barskiy rayon should target an increase in registration of state land from current 12.46% to 22%, which is an average for Vinnitsa oblast (Table 6). The improvements in number of land transactions can be achieved via improvements in registration practices (e.g., improving performance of registration personnel, increasing their qualification), improving access to finance and improving awareness of population regarding the procedures for land transaction registration. The reasons for the relatively low number of transactions should be investigated further and the reviled barriers should be target with specific administrative actions.

Figure 5 - Benchmarking results for Barskiy rayon of Vinnitsa oblast, 2015

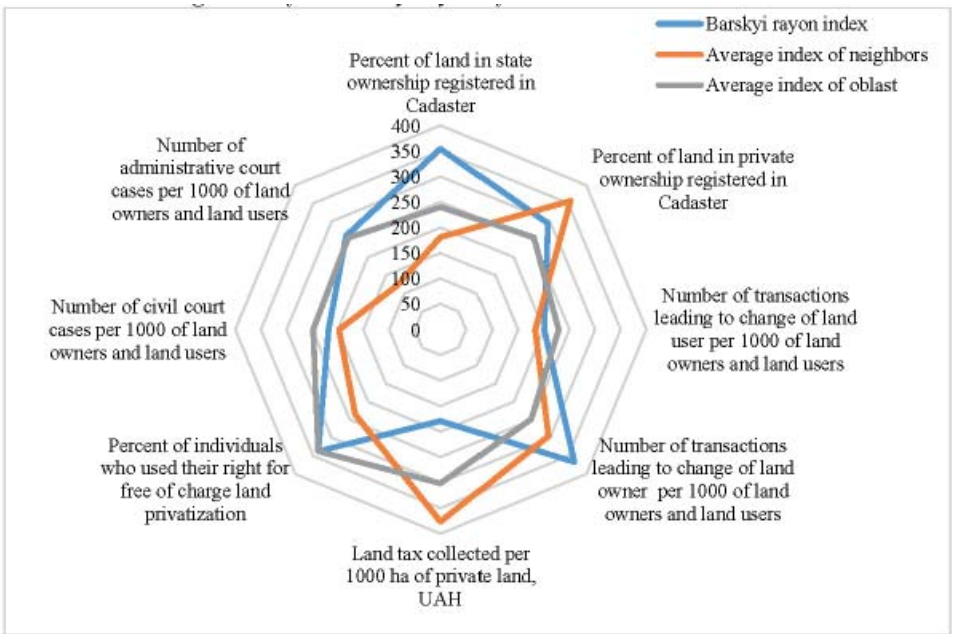


Table 6 - Comparison of ranking results with peer groups.

		Percent of in state land registered in the Cadaster	Percent of private land registered in Cadaster	Number of transactions leading to change of land user per 1000 of land owners and land users	Number of transactions leading to change of land owner per 1000 of land owners and land	Land tax collected per 1000 ha of private land, UAH	Percent of individuals who used their right for free of charge land privatization	Number of civil court cases per 1000 of land owners and land users	Number of administrative court cases per 1000 of land owners and land users
Barskyi rayon	Rank	354	294	201	367	179	337	218	260
	Value	12.46	70.56	43.89	0.07	0.04	91.03	0.22	0.04
Neighbors	Average Rank	181.0	356.5	183.3	295.5	376.5	235.0	197.8	120.8
	Value	26.32	64.48	51.75	1.82	0.02	92.88	0.32	0.02
Vinnytsia oblast	Average Rank	240.1	255.5	228.9	248.3	301.4	337.0	248.2	254.4
	Value	22.06	74.88	51.61	3.18	1.18	91.03	0.34	0.06

As demonstrated, land governance monitoring helps to address the issue with unobservable performance of local government authorities and establish clear targets for improvements in land governance functions.

4.7. Difficulties with practical implementation

One of the results of the pilot implementation of Land Governance Monitoring in Ukraine is identification of issues, which require normative changes or development of procedures in order to implement a full scale automated monitoring. First, there were issues with delays in data supply and lack of common structure for reporting. Besides, there are cases when data important for policy making is not recorded and/or is not provided in the form of regular reports (e.g. number and characteristics of the land plots that were expropriated for public use, gender of land owners, prices for rental and sales transactions, etc.). Overcoming these issues requires adoption of new regulations.

Second, several government agencies have corresponding service areas that do not match the administrative territorial structure of Ukraine. Most common case is that one local office serves several administrative units (e.g. city and an adjacent rural rayon). As a temporary solution, the reporting statistics was distributed among the administrative units proportionally to population. A permanent solution would be a requirement to report separately for each administrative unit.

Third, there are inconsistencies in standards used by authorities for land use categories and other characteristics of land governance. Thus, establishment of common standards would improve the performance of land governance functions by providing for better data exchange among the government authorities.

Fourth, several errors were detected in administrative records. A clear procedure is yet to be established for errors correction for each relevant agency. Among the solutions would be an establishment of procedures for automated control at data entry, linking the administrative data at parcel level and eliminating the duplication of information across the government authorities, and simplifying procedures for error correction.

Fifth, several authorities use licensed and certified software for management of administrative data which does not have functionality for producing regular, regionally disaggregated reporting on a selected set of indicators. Thus, development and certification of reporting software is required. This also implies that terms of reference for development of new software in different areas of land governance should, by default, include the reporting function.

Finally, data exchange procedures across the government authorities need to be improved. It requires adoption of normative acts that stipulate requirements for regular reporting and data exchange.

5. Implications and Conclusions

Introduction of the monitoring system allows testing several hypothesis regarding the state of local governance of land resources and its impact on growth and development. For example, effect of better protection of property rights for land on investments and productivity growth. It also provides information for design of policy intervention, monitoring their introduction and evaluation of impact. Moreover, monitoring provides for transparency and accountability of local government decision making, which to a large degree would decries the room for moral hazard in local government decision making.

The case of Ukraine demonstrates only some core features and possible extensions of Land governance monitoring. Examples of overlaying spatial data (including remote sensing of satellite images) can provide additional functionality to the monitoring system. Among additional tools that would extend the functionality of the monitoring system could be mass valuation of land and real estate, modelling and assessment changes in land tax, etc. The monitoring can also be extended to monitoring of forestry, water, urban land and real estate.

Monitoring provides evidence regarding the actual state of land governance at national and local levels and allows to reduce information asymmetry regarding the administration of land resources. It helps to reduce political speculation regarding land and enhances practice of evidence based policy making. Moreover, by improving one of the key resource market it improves the investment attractiveness of agriculture and rural areas.

The results of Monitoring point to a significant difference in the characteristics of land resources and land governance at the local level. Therefore, the land reform must take into account the diversity of local conditions and capacity for implementation of reforms at the local level and provides input to various international rankings.

Case of Ukraine demonstrates an example of successful institutional arrangements for implementation of the land governance monitoring. Comparison with monitoring experience of several other countries demonstrates the importance of establishing a working group within government at the level of decision makers and the need for normative regulation of the monitoring function. Also, the comparison of the presented case with examples of parcel level pilots in selected regions demonstrate that the presented approach of establishing the national system with reporting at the level of local governments can solve a

significant problem with asymmetric information and can be extended if necessary in terms of additional indicators and reporting scale. On the other hand, very detailed pilots in most cases lack capacity for extension to the national level.

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Annex 1 - Land tax revenue

	Tax per ha of private land paid by			
	Legal entities		Individuals	
	In cities	In rayons	In cities	In rayons
	(1)	(2)	(3)	(4)
Share of **private** land registered in Cadaster, %	0.016*	0.002	0.011*	0.001
	(0.008)	(0.002)	(0.006)	(0.002)
Share of **state** land registered in Cadaster, %	0.009	-0.003	0.009	-0.002
	(0.007)	(0.003)	(0.007)	(0.002)
Log(Total area)	0.232	0.338**	0.319	-0.045
	(0.302)	(0.131)	(0.231)	(0.104)
Unemployment, %	0.008	-0.102***	-0.041	-0.020
	(0.214)	(0.028)	(0.169)	(0.019)
Log(Wage)	4.171***	1.326***	1.131**	0.639***
	(0.823)	(0.291)	(0.504)	(0.187)
Landowners per ha	0.135	1.202***	0.116	1.365***
	(0.126)	(0.357)	(0.097)	(0.216)
Forests, %	0.035	0.017**	0.014	-0.003
	(0.025)	(0.008)	(0.018)	(0.006)
Developed, %	0.008	0.195***	0.010	0.003
	(0.016)	(0.064)	(0.011)	(0.023)
Water, %	0.034	0.023**	0.011	0.011
	(0.037)	(0.010)	(0.030)	(0.007)
Other land, %	-0.034	0.016	-0.001	-0.029*
	(0.034)	(0.017)	(0.033)	(0.015)
Contaminated, %		-0.109***		-0.067
		(0.019)		(0.042)
Pasture & Hayland, %	-0.044	-0.023**	-0.002	-0.007
	(0.069)	(0.011)	(0.049)	(0.008)
State owned, %	0.005	0.010	0.004	0.002
	(0.018)	(0.008)	(0.013)	(0.005)
Collective, %	0.936**	0.151	0.662*	-0.024
	(0.412)	(0.136)	(0.341)	(0.104)
Communal, %	0.160	0.972*	0.177	0.012
	(0.240)	(0.563)	(0.193)	(0.427)
Retirees, %	-0.129*	-0.011	-0.120**	-0.017
	(0.065)	(0.012)	(0.056)	(0.010)
Urban population, %	0.057	0.001	0.052*	-0.000
	(0.036)	(0.003)	(0.028)	(0.002)
Log(Average farm size)	-0.121	-0.045	-0.102	-0.147***
	(0.127)	(0.058)	(0.095)	(0.054)
Regional center	1.569***		1.601***	
	(0.578)		(0.503)	
Constant	-37.820***	-19.313***	-16.998***	-8.173***
	(7.961)	(2.439)	(5.878)	(1.787)
Obs	110	436	110	435
R^2	0.806	0.646	0.825	0.575

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; oblast FE are controlled for