

## Defining Cadastral Boundaries of Sub-National Administrative Units

### *Ukrainian Challenges and International Practice*

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# Defining Cadastral Boundaries of Sub-National Administrative Units:

Ukrainian Challenges and  
International Practice

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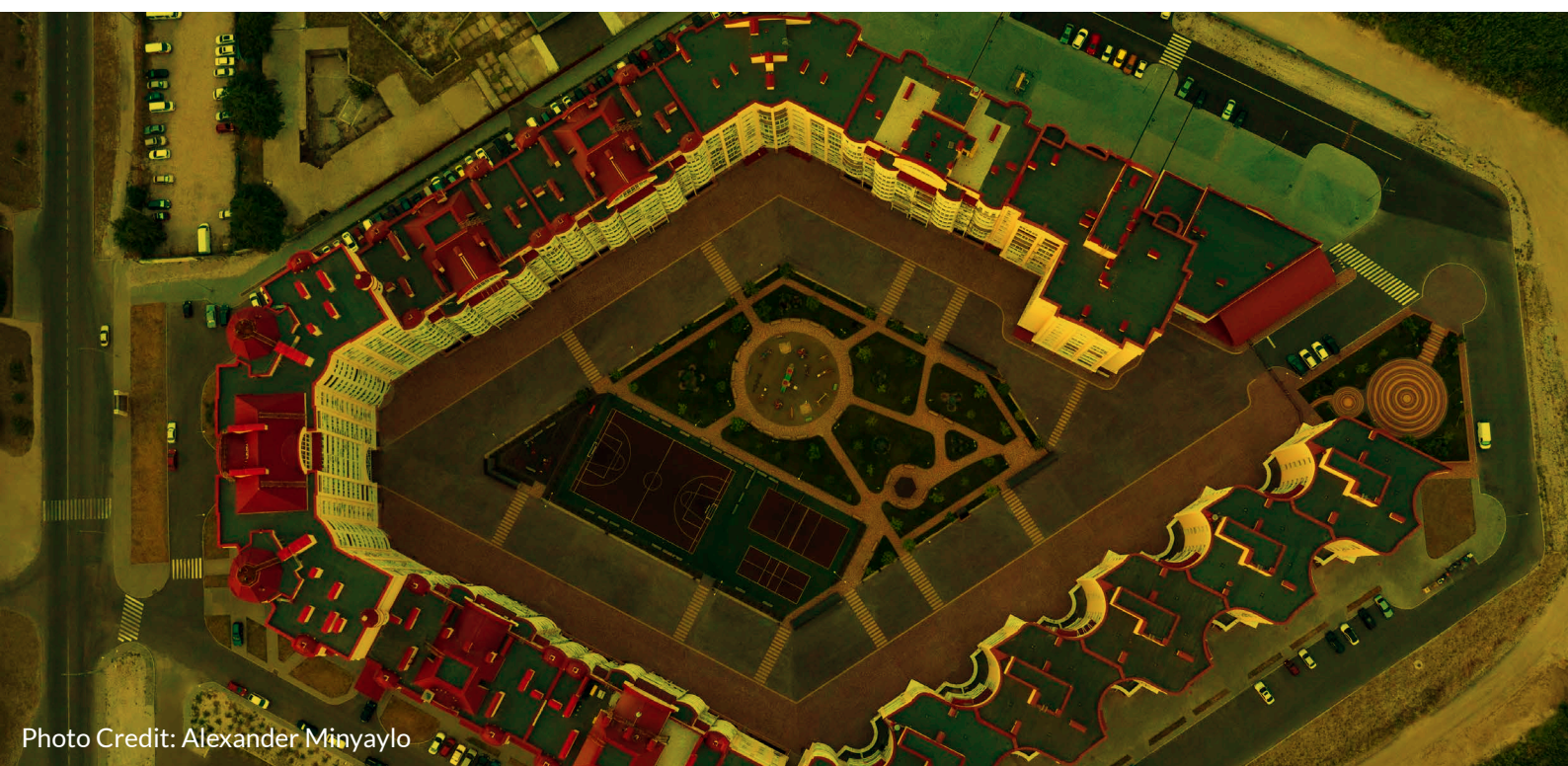


Photo Credit: Alexander Minyaylo

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## Preface



**UNECE**



**MADRID**



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# Background

**Over the past 10 years, Ukraine went through some major reforms in land governance and administrative-territorial structure.**



Photo Credit: Kharkiv City Council

In January 2013, the new unified electronic State Land Cadastre was established with support from the World Bank, consolidating efforts and infrastructure for land governance. At the same time, state- and community-owned land was delineated by transferring land inside the boundaries of settlements into communal ownership (while unclaimed land outside the boundaries was declared state property). Such delineation made the physical location and formal registration of administrative boundaries of settlements an important policy and local governance issue. From 2015 to 2020, Ukraine has implemented a major administrative reform reducing the number of sub-regional units

from 490 rural rayons (districts) and 183 cities to 140 new rayons and creating 1469 (amalgamated) territorial communities inside rayons (of them 381 urban)<sup>1</sup>. The state-owned agricultural land outside the settlements was transferred into communal property of such communities, which highlights the importance of establishing boundaries of these new administrative units. However, the process of demarcation and cadastral registration of the administrative boundaries turned out to be very slow and expensive. By June 2024, only 37% of settlements, 3% of territorial communities, no rayons (districts) or oblasts (regions) have been officially established and registered in the Land Cadastre boundary lines. Such slow progress with boundary registration has negative implications when managing land resources (including opportunities for corruption and encroaching), establishing of the address registry, tax collection, urban planning, launching the reconstruction programmes (as they require development of planning documentation) and others. In this note we look to the international experience for potential solutions.

## Normative Base in Ukraine

The existing legal framework regulating boundaries of administrative units in Ukraine (oblast, rayons, territorial communities and settlements) includes: The Land Code, the Law on State Land Cadastre (Article 32), Procedures for Managing State Land Cadastre (paragraphs 96-100) and the Law on Land Management. The most recent updates that replaced Soviet-era normative acts in this field were adopted in 2023. The legislation stipulates a clear procedure for demarcation and registration of the administrative boundaries based on the land management projects (plans) for establishing and changing of the boundaries. It is important to note that all the administrative boundaries which existed before the 2003 adoption of the Law on Land Management are considered as valid.<sup>2</sup> In cases of an absence of the cartographic materials about existing boundaries, the boundaries “will be considered to coincide” with those shown on the cadastral index maps (plans).

Decisions regarding establishing and changing the boundaries of rayons and cities are made by the Verkhovna Rada (Parliament) of Ukraine based on submissions from the Cabinet of Ministers. Decisions regarding the boundaries of villages and settlements are made by the respective village, settlement or city council. If such changes affect the boundaries of a territorial community, the decision is made by the Cabinet of Ministers of Ukraine, based on proposals from the relevant local councils. The registration is done by the cadastral registrars in the State Land Cadastre.

By June 2024, only 45 out of 1469 territorial communities have officially registered boundaries and an additional 43 communities have procured service for boundary demarcation but have not finished the boundary registration.<sup>3</sup> Boundaries of around 11,000 settlements out of 29,715, are registered. There are no district or region boundaries registered.

Active development of the land management projects (plans) for boundaries of territorial communities started after adoption of the respective procedures in 2021. Out of 88 projects procured via the PROZORRO online procurement system, 48 were procured in 2023 and 17 in the first half of 2024. The average cost of such projects is €7,735 for rural communities and €26,426 for urban communities. If registration continues at the same rate, it will take more than 30 years to register boundaries for all the territorial communities<sup>4</sup> and will cost more than €18.5 million (approximately 740 million Ukrainian Hrivnas) to the local budgets. The cost of registration of boundaries of oblasts, rayons and settlements will add to the total cost of registration.

## Practical Challenges

While the above numbers refer to the cadastral registration procedure based on the land management projects (plans), which suits well the boundary changes (adjustments), the legislation stipulates two alternative scenarios for registering boundaries based on historical maps and based on the index-cadastral maps (pre-existing information). However, implementation of these alternatives brings additional challenges.

First, most of the historical sub-national administrative boundaries are imprecise and outdated. Some paper maps with such boundaries were established in rough scale (up to 1:500,000), which can result in an error in boundary location of several hundred meters. Urbanized areas went beyond such boundaries since the boundaries were established more than 30 years ago during the Soviet time (See Figure 1 for an example at a scale of 1:100,000). Moreover, the logic of establishing boundaries of oblasts, rayons and village councils (which by the administrative subordination correspond to the current territorial communities) during the Soviet time was very different from the current needs and patterns of regional development. Finally, location of the historical boundaries

<sup>2</sup> Paragraph 8 of Section VII of the Final and Transitional Provisions of the Law “On State Land Cadastre”

<sup>3</sup> Based on [www.prozorro.gov.ua](http://www.prozorro.gov.ua)

<sup>4</sup> Most likely more than 30 years as there are several cases of boundary disputes and several communities lack capacity.



**Figure 1.** Example of overlaying a historical rayon boundary based on a digitized paper map of 1:100,000 scale with the current orthophoto. Note that the width of the digitized line has several hundred metres overlapping with land parcels and digital linear objects.

(unregistered in the State Land Cadastre) was not considered when the new land parcels were formed and entered in the Cadastre, which led to numerous cases of the historical boundaries crossing registered land parcels. These combined factors may leave much room for municipal boundary disputes and uncertainties with tax collection, allocation of addresses, authority over the land and infrastructure management, among others.

Boundary conflicts between local governments and conflicts of interest represent the second issue with registration based on pre-existing boundaries. In particular, several neighbouring communities dispute the use of high-value property (and boundaries respectively), are encroaching into the land of neighbouring communities or are involved into informal land/property use. A similar problem when the government of one community may not agree to register the boundary is when it would like to maintain a bargaining power over political issues important to these communities (often leading to establishment of enclaves).

Third, local communities (particularly during the war time) have limited technical and financial resources to procure development of technical documentation for boundary registration. Moreover, in the war-affected areas, it is unsafe or impossible to establish and register boundaries following the current cadastral procedures as they would require physical access to the area by land surveyors.

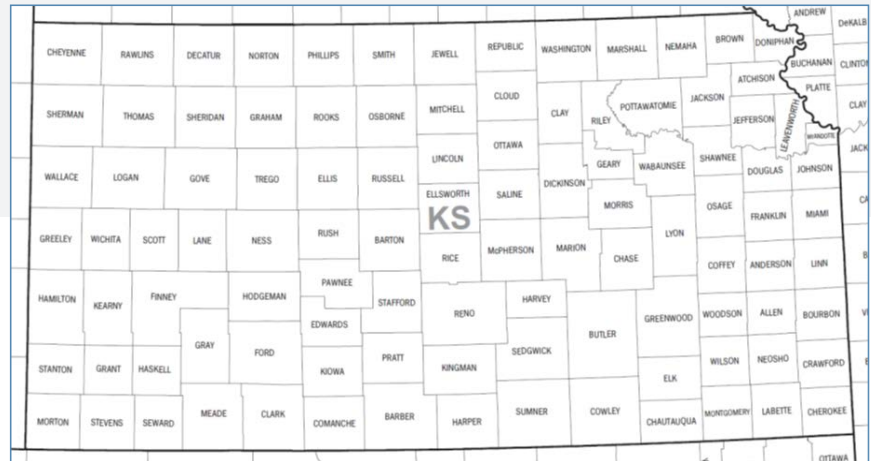
## In Summary:

1. The current normative base contains a bottleneck related to the authority of local governments of territorial communities, rayons and oblasts to initiate the boundary registration;
2. The Final and Transitional Provisions of the Law “On State Land Cadastre”, contains a vague solution of what would happen if the historical boundaries are not identified. It states that “in the absence of such materials [about boundaries that existed before 2003], ...the boundaries **will be considered to coincide** with those shown on the cadastral index maps (plans) of these areas”. Such a definition allows performing various technical functions, but does not establish an official status of the boundaries.



# International Perspectives

**Figure 2.** The State of Kansas county lines.  
**Source:** <https://gisgeography.com/us-county-map/>



All countries in their history went through the initial establishment of administrative boundaries and various administrative reforms to change them. Such reforms, however, should be distinguished from the ongoing adjustments of boundaries as a result of negotiations and disputes among the adjacent administrative units. Examples follow from the State of Kansas (USA), Denmark, Germany and Spain that illustrate some of the successful practices.

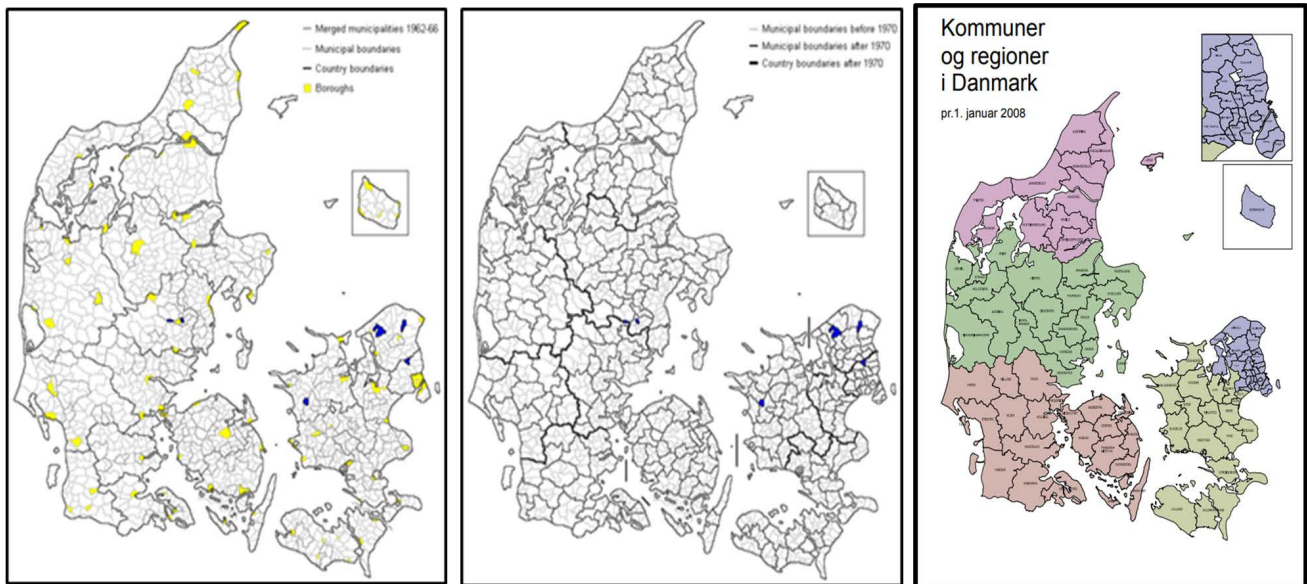
## Initial setting of the sub-national boundaries: Example of the State of Kansas

Boundaries of the major- (counties) and minor- (townships) administrative units within the State of Kansas were established in a relatively recent history (after the 1850s). Similar to other states of the United States, administrative boundaries in Kansas are a product of the rectangular Public Land Survey System. The boundary lines for townships were established by default being parallel to the Principal Meridians and Base Lines<sup>5</sup> in about 6-mile

intervals (Figure 2). A few adjustments were made to accommodate rivers and other natural lines and to correct for the surface curvature. Further adjustments were made to address development of cities and towns or to accommodate transfers between the adjacent communities. The boundaries of counties, in turn, coincide with the outer boundaries of the townships.

Different types of the default option are actively used in policy design and other areas of our life. The use of defaults is based on human psychology: a majority of people are often indifferent (or cannot make a rational choice) about the proposed options and would only take an action to change the proposed default if the benefit of an alternative option is higher than the cost of changing from the default. The Kansas example demonstrates a successful application of the default options for setting the initial administrative boundaries by a higher-level authority. It made the boundary establishment process fast and cost effective.

<sup>5</sup> Public Land Survey System: Principal Meridians and Base Lines, Land Description Diagram, GLO Plats. Prepared by the Mapping and Marking Committee, Fifth Edition (Revised and Expanded), June 2014



**1960s: 25 counties,  
2007: 5 adm. regions,**

**1970: 14 counties,**

**Figure 3.** Administrative Reforms in Denmark.  
**Source:** Galland et. al. (2015)<sup>6</sup>

## Denmark: Administrative reforms

Denmark implemented two administrative reforms relatively recently, in 1970 and in 2007.<sup>7</sup> The reforms were initiated by the national Government (Ministry of the Interior) and aimed at enhancing self-sufficiency of local governments and decentralizing planning responsibilities. As a result of those reforms, the country went from 25 counties and 1388 local authorities at the end of the 1960s to 5 administrative regions and 98 municipalities after 2007 (see Figure 3). In all cases, historical administrative boundaries were used to define the boundaries of new administrative units (a default option based on pre-existing boundaries). The country had the benefit of well-documented cadastral maps dating back to the 1700s (scale 1:4,000). The country also recognizes that administrative boundaries may change over time according to political aims, social needs and administrative objectives, including the management of urban/rural spatial planning. Local negotiations and public engagement are a key component in defining and adjusting the boundaries.

## Germany: Ways to adjust the boundaries

Regional planning goals influence municipal functions and boundary decisions in Germany. Two ways of adjusting the administrative boundaries are practiced: through legislative decisions (reforms of establishing new, greater and more efficient municipalities took place after World War II) and, if necessary, in cases of more local disputes, by the state authorities supervising municipalities, or – as “ultima ratio” – by the courts.

As an example, paragraph 8 of the Law on Municipalities (Gemeindeordnung) of the land (state) of Baden-Württemberg<sup>8</sup> says that the municipal boundaries can be altered if necessary for common interests. This can happen on a voluntary base in accordance with the supervisory authority of the state and on the basis of a decision taken by elected bodies of the municipalities. Before the elected municipal bodies can take such a decision, the Law on Municipalities says there shall be a hearing of affected citizens. Alternatively, a popular vote can be organized. Otherwise, the only way to change the existing status is through a law. As an example, the Greater Berlin Law (1920) has set city boundaries, expanding Berlin’s territory and addressing urban planning needs. The legislative decisions are taken at the state (Länder) – not at the federal – level.

<sup>6</sup> Galland, D., Enemark, S., Møller, J., Hvingel, L. T., Schrøder, L., & Sørensen, E. M. (2015). International Manual of Planning Practice: Denmark. In International Manual of Planning Practice: 2015 ed. The International Society of City and Regional Planners

<sup>7</sup> Enemark, S. and Højgaard, P.D., 2017, June. Transforming Society: The story of the Danish Cadastre from late 1700s. In FIG Working Week 2017: Surveying the world of tomorrow-From digitalisation to augmented reality. International Federation of Surveyors.

<sup>8</sup> Gemeindeordnung Baden-Württemberg, § 8, available <https://dejure.org/gesetze/GemO/8.html>



## Spain: Actionable dispute resolution mechanisms

The boundaries of the existing 50 provinces in Spain are derived mainly from the delimitation of Javier de Burgos in 1833. Nevertheless, boundary disputes emerge from time to time among adjacent communities. For example, there is currently a conflict between two communities because of a river mouth has modified the terrain. Relying on courts is often very time consuming and expensive. For this reason, out-of-court dispute resolution arrangements may help to produce a mutually agreeable solution before turning to the courts. Spain practices mediation and arbitration processes to resolve boundary disputes. Such arbitration is governed by the general arbitration legislation - Arbitration Law-Traducción de la Ley 60/2003 de Arbitraje.<sup>9</sup> In the event that there is no agreement between the affected communities, a decision would be made by the Constitutional Court.

## Contractual arrangements without boundary changes

There are ways to achieve planning and development goals without changing the boundaries. Hamburg's Metropolitan Region Cooperation represents a model for contractual agreements between the cities and surrounding regions to manage shared urban functions and infrastructure.

The State of Michigan Act 425 of 1984 on "Intergovernmental Conditional Transfer of Property by Contract" is another example of a contractual arrangement for the joint land use among the municipalities. 124.22 Sec. 2.(1) states:

**“Two or more local units may conditionally transfer property for a period of not more than 50 years for the purpose of an economic development project. A conditional transfer of property shall be controlled by a written contract agreed to by the affected local units.”**

Such transfer allows communities to share infrastructure costs and tax revenues for jointly used territories.



Credit: Viktor Adjamsky

<sup>9</sup> For English translation see David J. A. Cairns y Alejandro López Ortiz. Publicado en 22 ASA BULLETIN 4/2004 (Diciembre), págs. 695-721 available at <https://www.cremades.com/en/spanish-arbitration-law-traduccion-de-la-ley-602003-de-arbitraje/>



# Conclusions and Recommendations

The success of large-scale boundary changes caused by administrative reforms can be facilitated by three factors: i) a feasible arrangement for the default set of boundaries, ii) an effectively structured authority for establishing the boundaries, and iii) establishing a conflict resolution/prevention process which would minimise the need for lengthy court processes.

In the case of Ukraine, application of such factors would imply that:

## 01.

A default set of administrative boundaries should be identified. For example, it could be based on the lines that already exist in the index-cadastral map that approximate the historical boundaries. Such boundaries would have to be updated as necessary to reflect the current situation;

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## 02.

The default set should be enforced and registered at the national level, yet still allow the local government the right to later initiate adjustments/changes if and when necessary;

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## 03.

The establishment of a committee that would facilitate out-of-court boundary conflict resolution and cross-border collaboration among municipalities should be considered. Ukraine already tracks such municipality collaboration as a part of administrative reform, which could be further enhanced.<sup>10</sup>

The above steps would bring cost-effectiveness to the boundary setting process. It would leave the need for costly adjustments only to the rare cases when the cost of such adjustment will be less than the expected benefits for all stakeholders involved.

It must be highlighted that setting the default administrative boundaries is a political decision which could simplify their cadastral registration and performing of various other functions by local and national governments. Political sensitivity of such decision should also be recognized. Open public engagement in identifying the feasible default set, recognizing the benefits of such an approach and opportunities for further adjustments, as well as clear public communication, would minimize the opposition to such reform.

<sup>10</sup> 714 territorial communities are involved with cross-border collaboration projects (Monitoring of self-governance reform, Ministry of Restoration, April, 2024, available at [www.decentralization.ua](http://www.decentralization.ua))



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