



Rialtas na hÉireann
Government of Ireland



Land Use
Review

Land Ownership Analysis



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Problem statement

Accurate, reliable information on the compositional profile of land ownership in Ireland underpins the effective development and implementation of land use policy, plans or programmes. Building primarily upon the integration of the Department of Agriculture, Food and the Marine Land Parcel Information System and the Land Development Agency's beta State Asset Database, this report in support of the Land Use Evidential Review aims to:

- provide national preliminary estimates of area across broad categories of land ownership;
- summarise key data sources and caveats in their interpretation with respect to land ownership;
- undertake a gap analysis and recommendations for next steps.

Table 1: Data sources and indicative quality assessment based on currency and caveats

Dataset	Source	Currency	Geometry type
Public Roads	Road Management Office	February 2022	Line
State Property register	Property Mapping Registry Viewer	February 2022	Point
LPIS	Department of Agriculture, Food and the Marine	2019	Polygon
LDA state assets	Land Development Agency	January 2022	Polygon
Coillte Forestry	Coillte	2017	Polygon
Forestry Service	Department of Agriculture, Food and the Marine	2017	Polygon
PRA state assets	Land Development Agency	January 2022	Polygon

What we did & how we did it

Data sources

The datasets detailed in Table 1 were sourced by the EPA between December 2021 through February 2022. Additional efforts were made to attain a fee-exempt account with the Property Registration Authority (via landdirect.ie) but this was not possible as the EPA is not 100% funded by the Oireachtas, a requirement for fee exemption. Given the datasets available and considering the short time period allowed for this analysis, the summary information and statistics provided in this analysis are intended as a current best estimate of land ownership in the state.

Caveats communicated by data providers	Position in reliability hierarchy
	1
	2
	3
State Assets Sourced by LDA: This layer shows sites which are assumed to be within the ownership of the state however at the time of compiling this layer these sites were not registered with the PRA. These sites have been manually sourced and drawn by the LDA and will be updated regularly. The currency and accuracy of this data cannot be guaranteed.	4
	5
	6
PRA State Assets: The folio boundary data available in this dataset is derived from source data provided by the Property Registration Authority (PRA) and is subject to PRA copyright. The currency and accuracy of this data at the time of inspection cannot be guaranteed. Those wishing to ensure that folio boundary data is the most accurate and up to date available should access this information through landdirect.ie.	7

Data inputs review and quality assessment

Seven datasets were used from six different data sources. The majority of these were of polygon geometry type, i.e. representing an area. The public roads data however was provided as a line dataset, and the state property register as a point dataset. In reality, an area on the ground applies to each of these points and lines. These areas have been estimated as best as possible using the relevant polygon layers from the OSI Prime2 database. A summary of the processing applied, issues encountered, and the resulting areas is provided in the process flow diagram in Appendix 1.

Attribute issues

As the minimum aim in this analysis was to calculate high level public/private ownership statistics, gaps and inconsistencies in attribution, although present, were often of little concern. Some exceptions to this were:

- State Property Register point data
The numbers of point locations lost to the following issues is detailed in the process flow diagram in Appendix 1.
 - A number of records in this point dataset did not contain geographic coordinates, rendering them unusable
 - The coordinates for some records were incorrect, plotting a significant distance from Irish land
 - As some points were noticeably misplaced geographically it was necessary to perform some rudimentary validation of the location of all points. This validation could only be performed by cross referencing the address and Eircode attribution for the records. These attributes were variable in quality and completeness and therefore

resulted in the omission of more points as they could not be validated with reasonable ease.

- Land Development Agency State Asset datasets

The Registered Owner attribute in these data was used to create the public ownership categorisation. Some initial cleaning and harmonisation of this attribute was necessary over both datasets prior to geometry cleaning or grouping.

Geometry issues

As a matter of course, the following geometry related checks were performed on all datasets:

1. Identifying and resolving areas where features overlap within a dataset.

In some instances such overlaps are very small and likely the result of digitising errors. In other instances, the overlaps are much more substantial. If left unresolved these would result in multiple counting of areas and would therefore result in errors in final percentage areas of different ownership categories. The method of resolution applied varied depending on the dataset but in all cases the most pragmatic and timely approach was taken in line with the specific goals of this analysis. A full breakdown of these areas and the approach taken to resolve them is available if required. Specific to the Land Parcel Information System data, large overlaps are legitimately present where commonage occurs. Commonage areas were therefore identified prior to any subsequent treatment to resolve more minor overlaps.

2. Checking and repairing invalid geometries.

Such checks identify seemingly minor geometry issues such as self-intersecting polygons, null areas etc. Whilst not noticeable when viewing the data, such errors cause many issues when analysing and integrating the data with other datasets. Geometry repairs were performed at many points throughout the analysis workflow to avoid such issues.

Data integration and reliability hierarchy

It is expected when integrating datasets from multiple sources that there will be areas where the datasets overlap or contradict each other. Developing a reliability hierarchy dictates the order of priority given to each dataset during the integration process provides a transparent and consistent approach in managing potential contradiction. This order is listed against the data sources in Table 1 and is also demonstrated graphically in the process flow diagram in Appendix 1. A more robust and detailed conflict resolution approach would be more appropriate if more detailed land ownership statistics or mapping is performed in the future. In this instance, and in the context of tight timelines and resources for this initial phase of analysis, implementing this dataset reliability hierarchy was deemed the most pragmatic approach.

Public ownership categorisation

The 'Registered Owner' field in LDA data was standardised and harmonised with the latest iteration of the CSO Register of Public Sector Bodies (<https://www.cso.ie/en/releasesandpublications/ep/p-rpbi/registerofpublicsectorbodies2020-final/>). The Register provides the basis for the preparation of Government Finance Statistics and Excessive Deficit Procedure reporting for Ireland. It lists all organisations in the State which are considered to be in the general government sector in accordance with the European System of Accounts (2010) classification for general government (S.13) and all public corporations in the non-financial (S.11) and financial (S.12) sectors (<https://ec.europa.eu/eurostat/documents/3859598/5925693/KS-02-13-269-EN.PDF/44cd9d01-bc64-40e5-bd40-d17df0c69334>).

Legacy names of Irish state entities were cross checked against the Irish State Administration Database (<http://www.isad.ie/>). This database records information about the formal development and composition of Irish government and public administration organisational structures at the national level from 1922-2014. Changes post 2014 are captured in the CSO Register of Public Sector Bodies 2015-present.

Given the uncertainties arising from the gap analysis, an interim classification was applied to support the production of summary statistics across broad thematic sectors. In future, when the gap analysis is complete and a finalised register of publicly owned land developed, categorisation of the entities operating from each land unit should follow the OECD General Classification of Function of Government (COFOG; <https://www.oecd.org/gov/48250728.pdf>).

Summary Results

Figure 1: Estimated Percentage area of land ownership in Ireland.

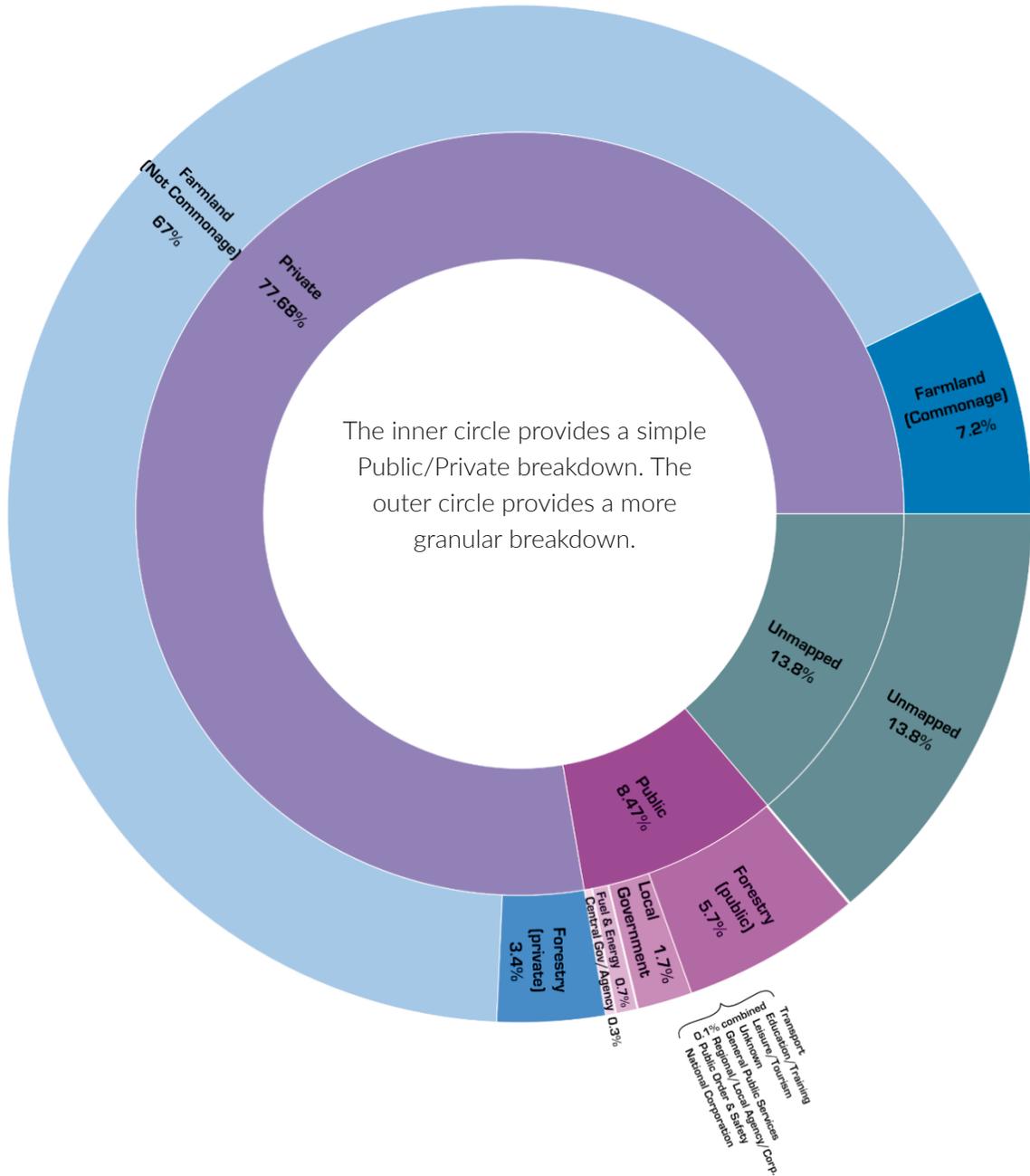
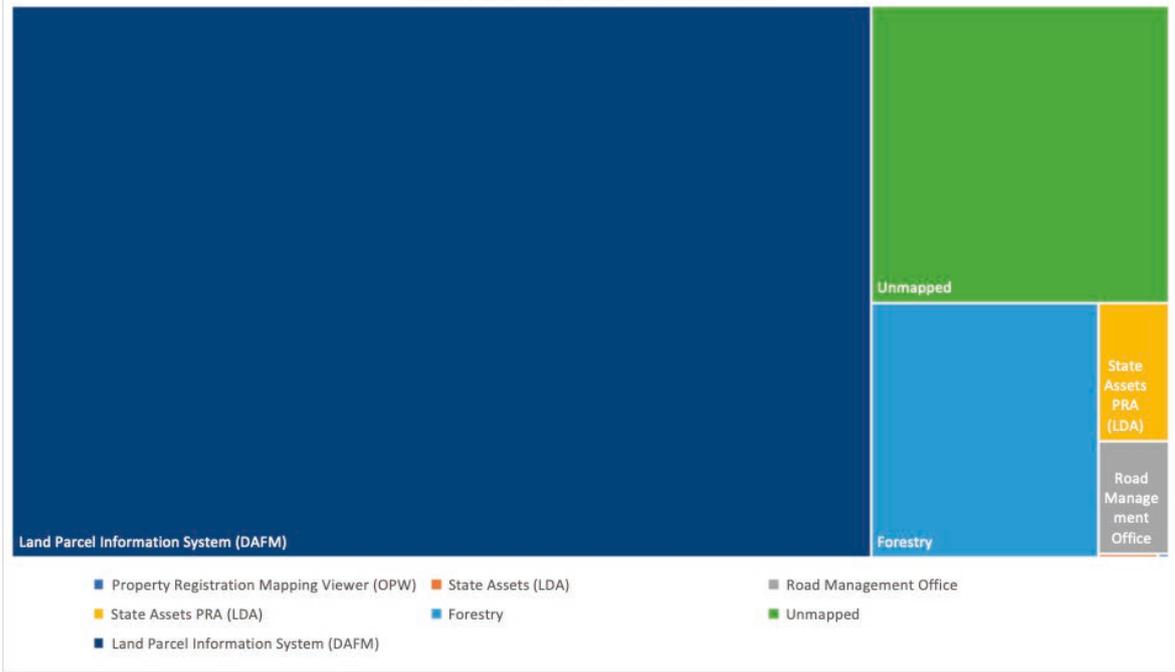


Figure 2: Area Mapped by Data Source



Gap Analysis

Geographic data

The output from this analysis includes 9,683 km² in the 'Unmapped' category. The datasets used for agricultural and forested land in this analysis can be considered reasonably complete and reliable, and are presumably a very minor proportion of the 'Unmapped' area. However, only a single year of the Land Parcel Information System (LPIS) data has been included here. It is known that a claim is not submitted for every parcel every year. Therefore, combining data for LPIS for, for example, five consecutive years could have offered a more complete picture. Whilst it is unlikely that this would have greatly affected the high-level statistics that this report aimed for, any more detailed analysis in the future should consider taking this approach.

Furthermore, distinguishing management levels within agricultural land would be beneficial; for example distinguishing between lands that are privately leased or company owned.

Some waterways and lakes are included as under charge of Waterways Ireland and are therefore accounted for in the public ownership percentages. It was unclear if the omission of more inland water areas in this category was a data gap which resulted in the area of most inland water remaining in the 'Unmapped' category.

The public ownership data sources however cannot be considered in the same light. The LDA datasets are in beta form and are still under development. The State Property register, while valuable as an input for this first draft, is not without its data issues. There are inaccuracies in the point form it is captured, but also in the coarse treatment applied to bring this to a polygon dataset which uses only the intersecting buildings from Prime2 and therefore misses the associated lands for the property.

Finally, private and publicly owned residential areas, and multioccupancy buildings, remain a substantial data gap.

Public Ownership Grouping

The beta version of the Land Development Agencies represents a first iteration of a centralised national register of spatial data representing state-owned land. One of the most significant challenges in the development of the beta version are ongoing compositional and organisational structure changes across public sector bodies and consequences for incorrect and/or out-of-date registered owner associated with state-owned folios in the Land Registry Service of the Property Registration Authority.

Although 93% of the land mass of the State and 90% of the legal titles are now registered with the Land Registry (<https://www.prai.ie/land-registry-services/>), digitisation is still ongoing and gaps remain particularly in urban Dublin where many public sector bodies are located. In addition, compulsory registration has had a phased implementation across counties and cities largely from 2006 to 2011. Consequently, digitisation rates of folios representing property sold prior to ca. 2006 and that have not been re-sold since ca. 2006 (i.e. many state-owned lands) are lower.

The CSO Register of Public Sector Bodies represents the most comprehensive and up-to-date inventory of state-funded entities facilitating the standardisation and harmonisation of the LDA registered owner titles as well as facilitating a preliminary gap analysis. Given the Register's role in financial reporting under the European System of Accounts of 815 entities listed 38 relate to extra-budgetary or pension funds and were excluded from the analysis.

Out of the 224 unique entities listed across the PRA and LDA datasets, 217 were identified in the CSO PSB register. Of the seven that could not be identified, all are now in the process of liquidation or dissolved. Of the 620 entities identified in the CSO PSB Register that are not found in the LDA/PRA data, many may represent multiple entities contained within the same parent organisation and/or located in the same multioccupancy property. However, some notable omissions from the LDA/PRA data include whole central departments, e.g. Department of Foreign Affairs and Department of Social Protection, and national agencies e.g. the Environmental Protection Agency and the Central Statistics Office.

The current state of national land ownership data is fragmented and limited. For example, the accurate identification of state-owned lands in the Property Registration Authority data is confounded by the fluidity of public sector body structures across successive governments. In addition, the phased implementation of compulsory registration has led to lower digitisation rates of properties sold prior to ca. 2006 and gaps remaining in urban Dublin where many public sector bodies are located.

Consequently, the establishment of Tailte Éireann via the merger of the Property Registration Authority, Valuation Office and Ordnance Survey Ireland will address the immediate need for the development of centralised and harmonised national spatial infrastructure for land management

Data Source	No. of entities	In CSO PSB Register	Not in CSO PSB Register	CSO PSB not identified in LDA or PRA
LDA	57	57	0	
PRA	199*	192	7	
Subtotal	256	249	7	
Overlap LDA:PRA	32	32	0	
Total unique	224	217	7	620

* Excl. 'None' and 'Other'

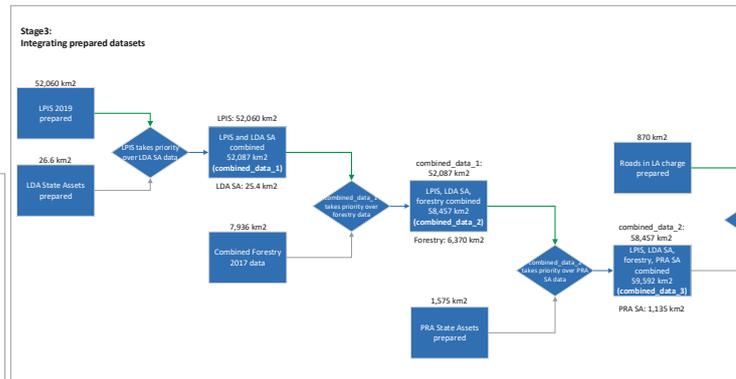
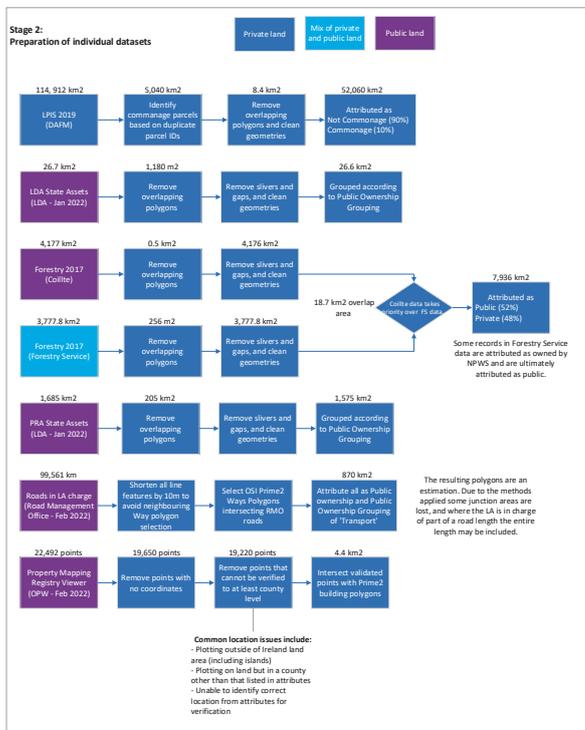
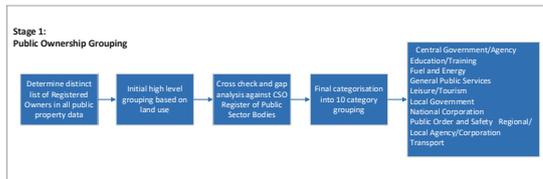
Recommended Next Steps

If it is determined that detailed land use ownership statistics or functional mapping is required, the following improvements should be strongly considered for these products:

1. Engagement with, and active involvement from, the Property Registration Authority.
 - Specifically, to improve our use of the State Property Register a folio number is provided in many instances for the registered property; a data request to the PRA for the associated polygon data for these folios would provide a more complete and reliable dataset than we can generate presently.
 - More broadly, the folio boundaries intersecting any area that remains unmapped would at least provide baseline spatial data for further investigation and land ownership categorisation.
 - A significant part of the currently unmapped area is likely to be residential. Spatial data from the PRA for these areas, in conjunction with GeoDirectory data, would aid verification of ownership status.
2. Building on the outputs from point 1 above, attain a full listing of public housing stock from all Local Authorities. If these residential properties can be identified as publicly owned this will further improve the land ownership attribution.
3. Industrial and waste disposal areas have not been explicitly looked at in this analysis. EPA licenced facilities and their boundaries could be reviewed and potentially incorporated in future products.
4. Development of a spatial database to accompany the CSO Register of Public Sector Bodies to support tracking changes in state-owned lands.
5. Identify and incorporate data sources that would inform the leasing status of agricultural land.

Appendix 1

Process Flow Diagram:



Appendix 2

Protected Areas and land ownership

Some evidence (anecdotal?) suggests that Ireland is somewhat unique in how much of our protected areas (SAC and SPA) are on private land. To confirm and quantify this, the SAC and SPA spatial boundaries were downloaded from the NPWS website (on 11 March 2022), intersected with the land ownership spatial dataset and summarised with respect to public/private ownership and on ownership grouping. The results of this analysis are displayed below.

Row Labels	Sum of Percentage Area
Private	67.44
Public	11.07
Unmapped	21.49
Grand Total	100

Public/ Private/ Unmapped	Ownership Grouping	Area (m ²)	Percentage Area
Private	Not Commonage	3410633296	36.7565
Private	Commonage	2520434746	27.1628
Private	Private (forestry)	327105959.2	3.5252
Public	Public (forestry)	830308501.9	8.9482
Public	Central Government/Agency	113438758.7	1.2225
Public	Fuel and Energy	39558782.89	0.4263
Public	Local Government	38010325.69	0.4096
Public	Unknown (public)	3464107.671	0.0373
Public	General Public Services	724741.2363	0.0078
Public	Transport	431237.2581	0.0046
Public	Leisure/Tourism	333537.0717	0.0036
Public	Education/Training	320423.826	0.0035
Public	Regional/Local Agency/ Corporation	304598.2168	0.0033
Public	Public Order and Safety	16.047707	0.0000
Unmapped	Unmapped	1993936169	21.4887
		9279005201	100

Other reports in the series:

Phase 1 Document 01: Land Use Evidence Review Synthesis Report

Phase 1 Document 02: Stakeholder Categorisation

Phase 1 Document 03: Land Ownership Analysis

Phase 1 Document 04: Land Use Policy Catalogue

Phase 1 Document 04: Land Use Policy Catalogue (Appendix)

Phase 1 Document 05: Land Use Indicators

Phase 1 Document 06: National Land Use Policy - Review of International Best Practice 1

Phase 1 Document 07: Review of National Land Use Plans 2

Phase 1 Document 08: Socio-Economic Dimensions of Land Use

Phase 1 Document 09: Socio-Economic Dimensions of Land Use, Synthesis Report

Phase 1 Document 10: Financial Instruments and Land Use

