

Supporting Transparent Land Governance in Ukraine

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Land 
Transparency

Supporting Transparent Land
Governance in Ukraine



Overall objective and implementation modalities

Objective: Create preconditions for transparent functioning of land markets to ...

- ...enhance efficiency and sustainability of resource use
- ...provide a basis for rural investment and growth by small and medium farms & rural SMEs
- ...counter rural depopulation and impoverishment

Supported by EU (2nd phase) implemented in close collaboration with

- Ukrainian institutions (MAPF, SGC, MoJ, MoEDT, NAIS, FLA, MDT, MCDDT, Ukrstats)
- EU-supported projects (IPRSA, U-LEAD, PRAVO) and other partners

Modalities of implementation

- Technical assistance only, no HW (extra EU procurement); cannot substitute for Government work
- Studies, Monitoring Piloting and Impact evaluation of new approaches

Link to WB support

- Potential budget support to PCG capitalization
- Potential scaling up of farmer support programs

Agreed goals

- Legal basis for land market established & implemented with progress monitored
- Agrarian registry (AR) used for State Support (SS), leverages banks, e-hub for farmers
- SGC reformed towards a service organization implemented
- Land registration & transfer simplified, holes for raiders blocked, role for private sector
- Cadaster & registry fully interoperable & reasonably complete
- Local Gov'ts have capacity & data to develop & enforce plans; ↑ land revenue by 25%
- Landowners aware of legal framework & incidence of land disputes monitored
- Procedures to monitor land governance established & operational

A lot had been achieved when the war started

Legal & regulatory changes to open land markets & increase transparency

- Laws & regulations (see next slide)
- Implementation strategy/white paper
- Communication to increase legal awareness (LA); survey on LA; FLA caseload monitoring

Institutional transformation & decentralization of land management

- e-auctions platform established; planning regulation & manual for LG spatial plan
- Land relations monitoring (land market & land use based on satellite imagery)
- SGC security assessment suggesting considerable gaps & risks

Allow (small) producers to take advantage of land market through access to finance

- Establish & pilot SAR as mechanism for transparent targeting & distribution of state support
- Create regulatory basis for PCG establishment to improve access to affordable private sector credit

Status of regulations land laws (Sept 2022)

Law	Total	Adopted	Draft for consult.	Drafting Started	Not started	Responsible
1.Anti-raider (340)	5	5	0	0	0	MoJ; MAPF
2. Turnover (552)	3	2	1	0	0	MinEco, MoJ
3. Planning (711/2280)	10	9	1	0	0	MinReg, MinEco,
4. NSDI (554/2370)	3	3	0	0	0	MinEco, MAPF
5. SAR/Sup (985/3295)	6	5	0	1	0	MinEco (5)
6. SGC ref (1423/2194)	23	7	4	0	12	ME, MAPF, Mincult,
7. e-auction (1444/2195)	1	1	0	0	0	MinEconomy
8.PCG (3205-2/1865)	11	5	0	0	6	CMU, NBU
Total 8 laws	62	36	6	2	18	

The war has shifted priorities in 3 ways

I: Deal with immediate legal & institutional challenges; monitor land use

- Remotely sensed monitoring of war-induced damage to fields & crop production;
- Securing data against loss or manipulation; move towards distributed storage in cloud
- Adjust legal environment to deal with war challenges
- Land relations monitoring (land & mortgage market)

II: Support Ukraine's moves to speedily qualify for EU accession

- Establish SAR as a payment system that is fully compliant with EU regulations
- Establish parcel/field-based LPMIS in line with EU regulations for land use monitoring
- Support to drafting & implementation plan for land-related issues in Law 2322-IX
- Launch small farmer baseline survey

III: Accelerate SAR implementation to provide transparent producer support at scale

- Support Ministry in using SAR to roll out & communicate 50 mn. EU-supported PSG
- Evaluate program to identify lessons & use as basis for other donor & private sector efforts
- Discuss with Gov't & banks ways to use experience & SAR to kick-start PCG
- Use hotline to link farmers to FLA and use this as basis for court case monitoring case study

I: Addressing immediate war challenges

Securing cadastral data against loss or manipulation

- Initial security assessment revealed vulnerabilities on HW & SW side
- Server evacuation immediately after war
- Agreed on move towards distributed storage
- Assessment of server & SW software security & SW cloud compatibility
- Feed into anti-corruption law implementation plan & medium term SGC strategy once conditions right

Support adjustments in legal environment

- Laws 2247, 2254 and 2255 try to protect against war challenges but may have been too restrictive
- Support to DL 7636 to re-establish e-auctions & facilitate instalment purchase of permanent use land
- Provide legal basis for comprehensive land relations monitoring
- Document impact of e-auctions (paper); support to mass valuation pilot

Monitoring of land market & war-induced damages

- Developing ML algorithm based on RS; link to crop cover monitoring to assess crop damage
- Monitoring of land sales market developments

Data at village level	Crop area dmg		Any indicator
	Yes	if yes,ha	

P1: Feb 24 - Mar 12	0.009	268	0.122
P2: Mar 13-26	0.023	450	0.163
P3: Mar 27 - Apr 10	0.006	161	0.103
P4: Apr 11 - 24	0.011	458	0.102
<i>Subtotal P1 - P4</i>	0.037	498	0.184
P5: Apr 25 - May 7	0.008	254	0.100
P6: May 8-22	0.009	184	0.101
P7: May 23 - Jun 3	0.014	286	0.103
P8: Jun 4-18	0.011	272	0.101
<i>Total P1 - P8</i>	0.048	614	0.187
P9 Jun 19 - Jul 2	0.022	292	0.105
P10: Jul 3 - Jul 17	0.030	250	0.110
P11 Jul 18 - Jul 31	0.020	192	0.107
P12: Aug 1 – Aug 14	0.024	176	0.108
<i>Total P1 – P12</i>	0.065	777	0.199

Conflict data – see [paper](#)



Summer crop area regression

	Cereal	Corn	Sunflower	Soybeans	All-SCs
DA pre-planting	-0.034 (0.024)	0.082*** (0.032)	-0.229*** (0.036)	0.082*** (0.017)	-0.099*** (0.028)
DA planting	-0.149*** (0.030)	0.129*** (0.039)	-0.397*** (0.045)	0.005 (0.022)	-0.412*** (0.035)
DA growing	-0.131*** (0.018)	-0.097*** (0.023)	-0.555*** (0.027)	-0.023* (0.013)	-0.806*** (0.021)
CI pre-Planting	51.646*** (12.246)	-207.109*** (15.942)	44.453** (18.225)	-1.174 (8.807)	-112.184*** (14.369)
CI planting	-123.665** (54.650)	18.537 (71.141)	-141.182* (81.328)	8.378 (39.301)	-237.932*** (64.123)
CI growing	-111.387** (54.695)	491.950*** (71.200)	-679.454*** (81.395)	-28.197 (39.333)	-327.088*** (64.176)
Winter crop ha	-0.330*** (0.004)	-0.118*** (0.005)	-0.258*** (0.005)	-0.043*** (0.003)	-0.748*** (0.004)
year=2022	-311.710*** (12.382)	-25.931 (16.119)	96.787*** (18.427)	13.687 (8.904)	-227.167*** (14.528)
R ²	0.361	0.076	0.227	0.086	0.608

DA= Damaged area
CI = Conflict intensity

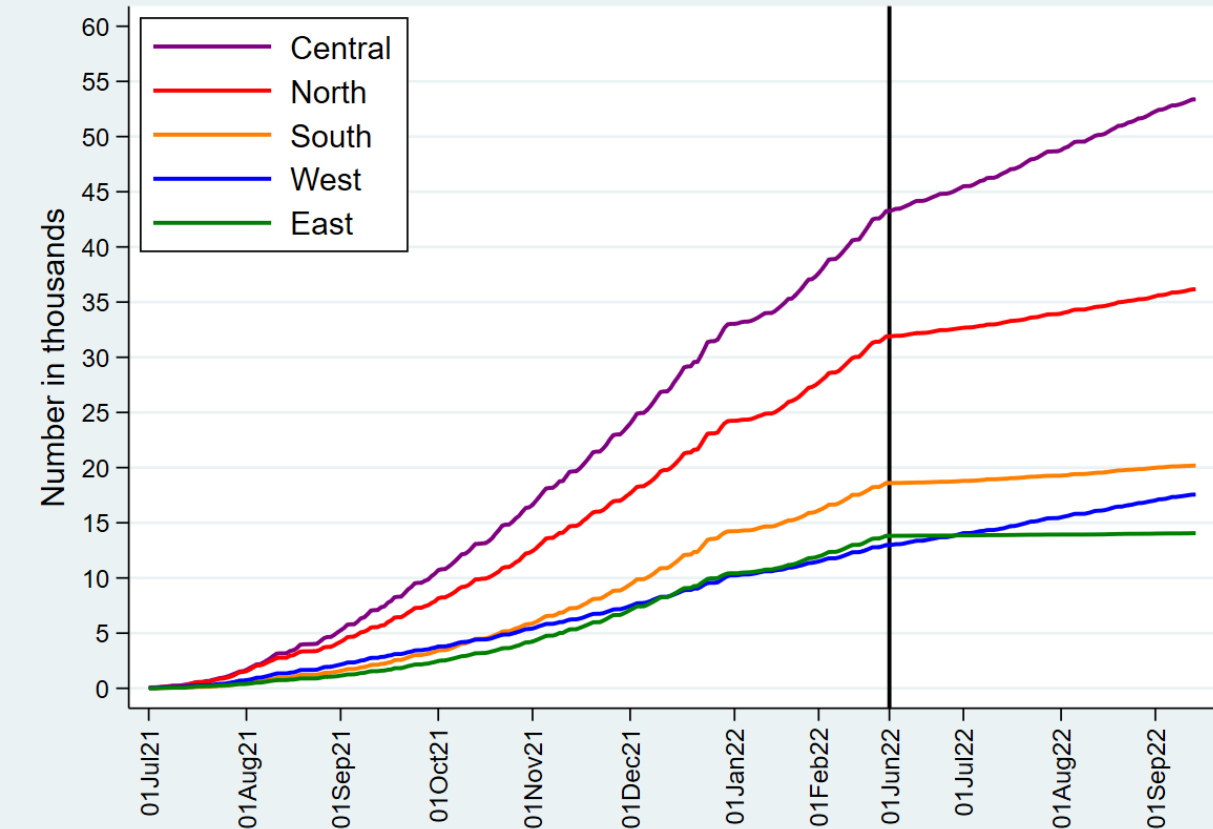
Estimated area impact on summer crops: Direct and indirect

	Total	Village councils with conflict activity?				Occupied
		No		Yes		
			Total	Field damage?		Aug. 22
				No	Yes	
(1) Full model (B)	17.151	13.149	4.002	2.720	1.282	2.062
(2) No conflict (S1)	17.954	13.149	4.805	3.096	1.709	2.668
(3) No macro/conflict(S2)	19.726	14.570	5.157	3.332	1.825	2.836
(4) Winter crop adj. (S3)	19.349	14.326	5.023	3.254	1.769	2.743
(5) Conflict effect (S1-B)	0.803		0.803	0.376	0.427	0.605
(6) macro effect (S2-S1)	1.772	1.420	0.352	0.236	0.116	0.168
(7) Conf. & macro(S2-B)	2.575	1.420	1.155	0.612	0.542	0.774
(8) W crop adj. (S3-B)	2.198	1.176	1.021	0.535	0.487	0.681
No. of VCs	10,403	8,336	2,067	1,388	679	988

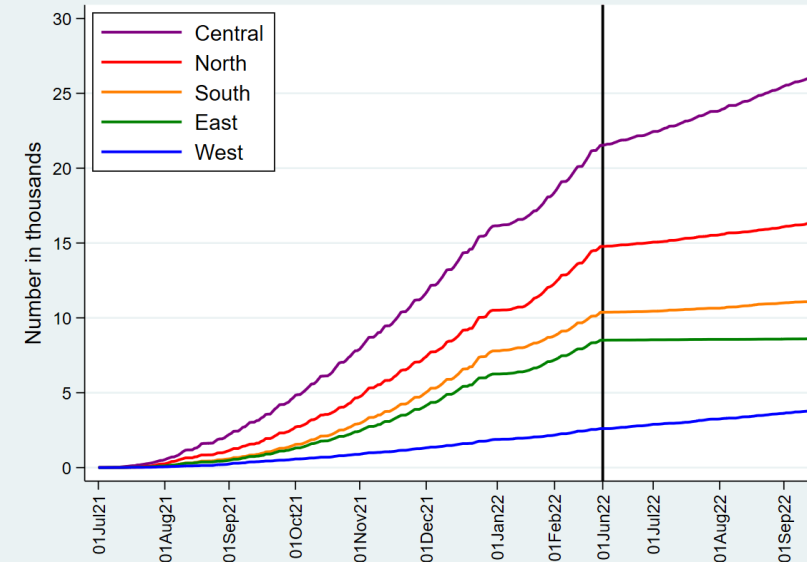
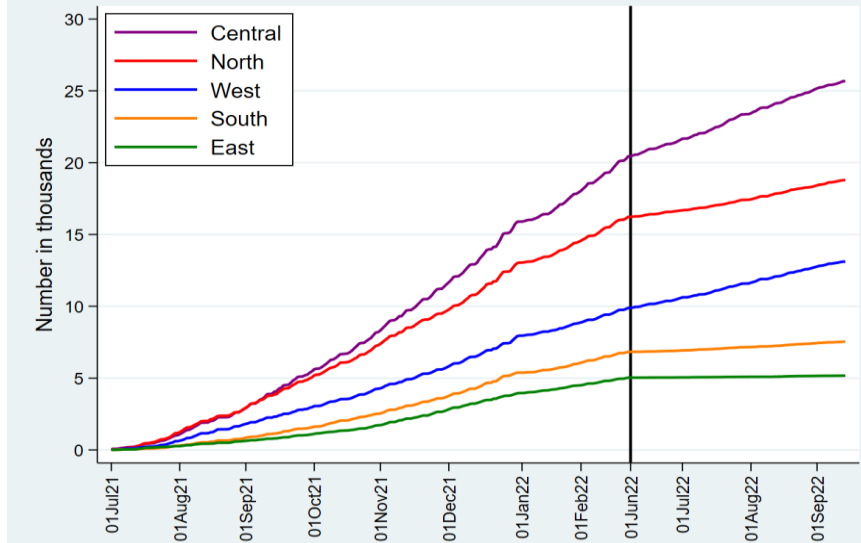
Some 25% of area lost – 15% to occupation and 10% in territory under Ukrainian control – yield estimates still to be done

Land sales market activity before & during war

Total no of sales transactions by region



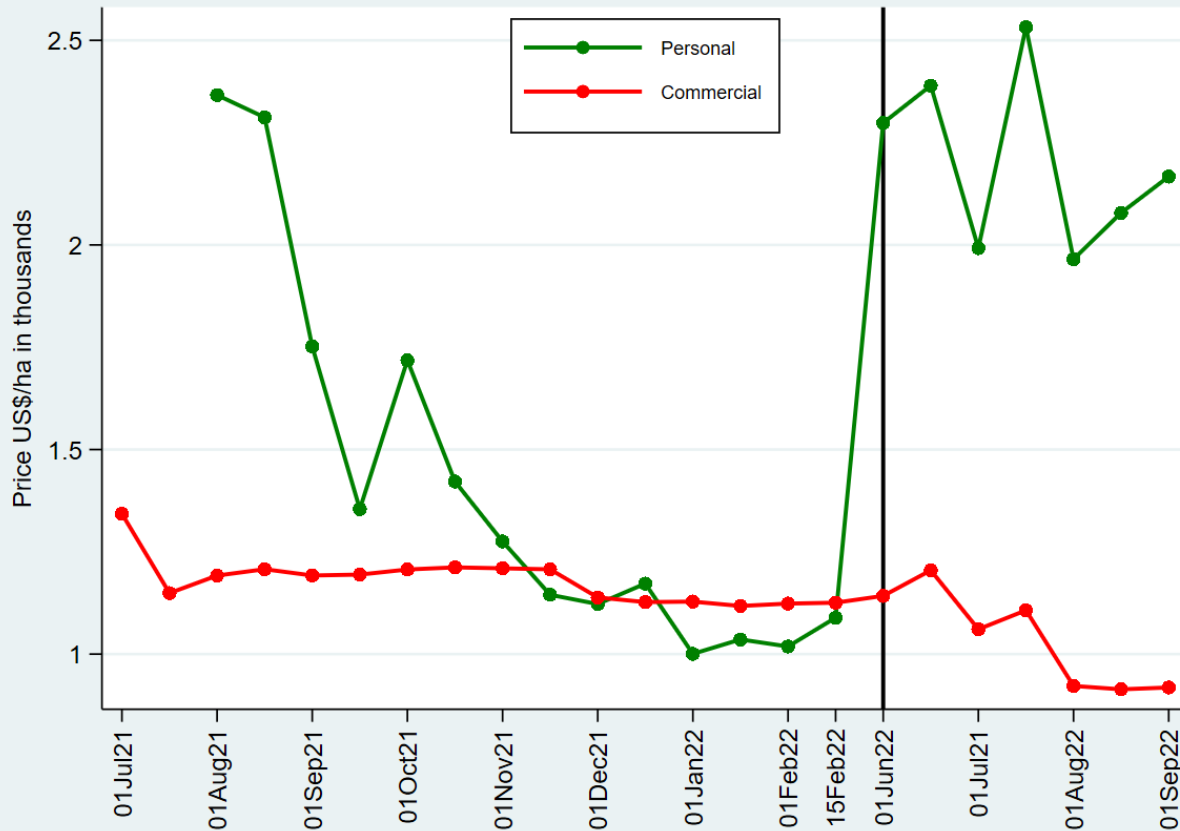
Land for personal farming



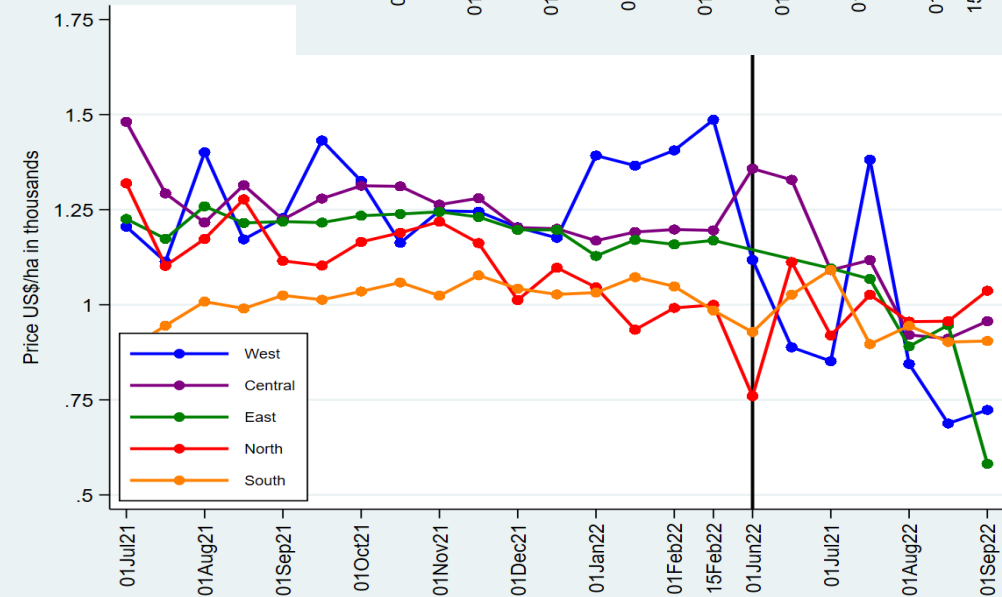
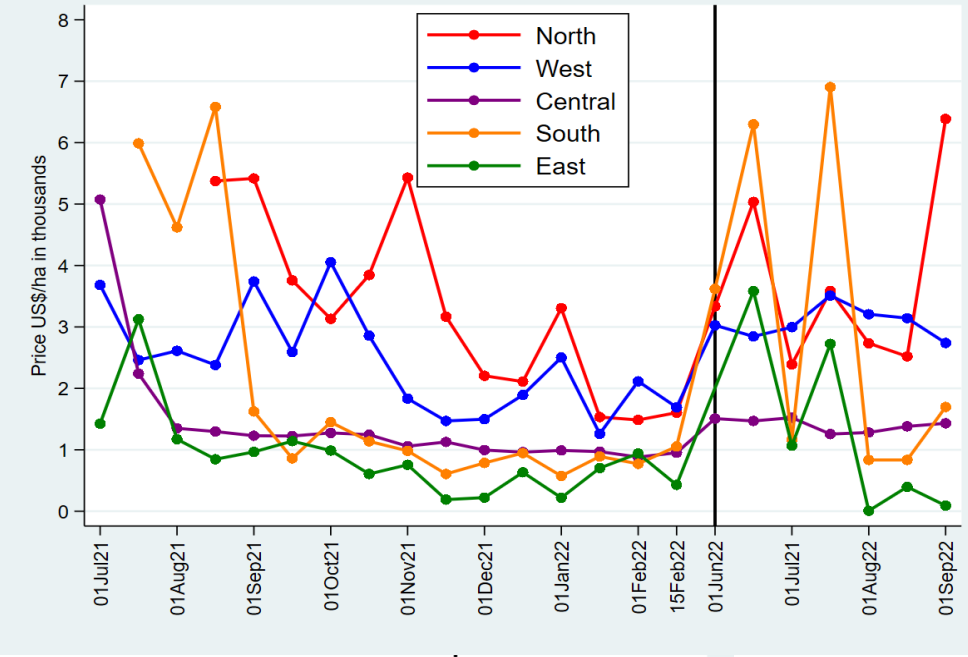
Commercial farmland

Land prices before & during war

Land prices (US\$/ha) for personal and commercial farmland



US\$/ha personal farmland

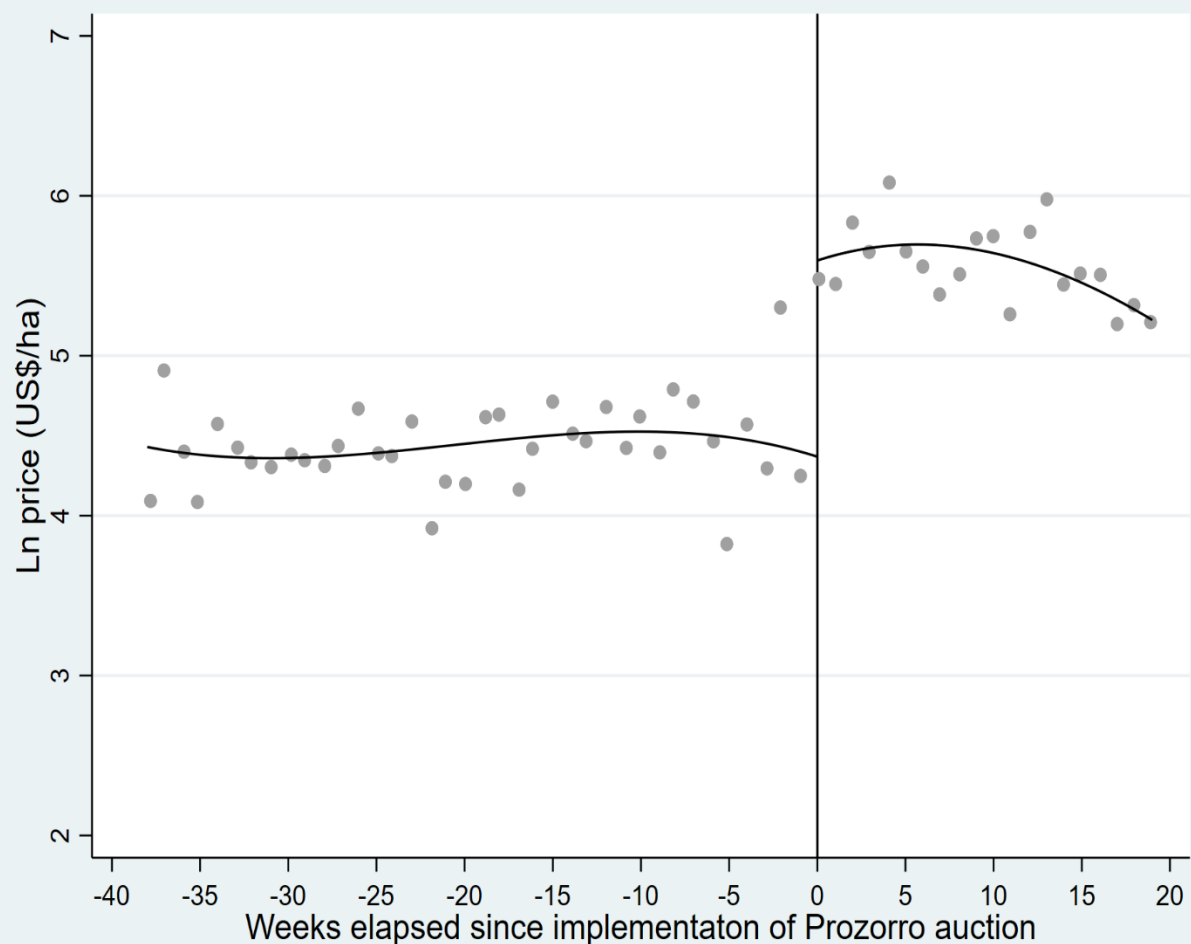


US\$/ha comm. farmland

Impact of e-auctions: Basic data

Year	No. of auctions			Share organized	
	total	success	ha	..online	by SGC
2015	1,935	1,530	28,345	0	0.54
2016	2,817	1,916	42,754	0	0.87
2017	3,388	2,139	43,358	0	0.84
2018	5,108	3,519	65,859	0.06	0.85
2019	8,710	5,327	83,269	0.51	0.69
2020	2,431	847	13,408	0	0.50
2021	7,805	5,232	58,442	0.09	0.38
2022	2,041	1,043	9,964	1	0
Total	34,235	21,553	345,399	0.22	0.61

Impact of e-auctions - results



Determinants of lease price in e-auctions

Prozorro auction	0.931*** (0.111)
SETAM auction	-0.207*** (0.0416)
SGC offline auction	-0.381*** (0.0352)
Normative value	0.594*** (0.0213)
No. obs.	20,688
R ²	0.296

Sample 1: 2021/22 only

- Doubling of prices as soon as Prozorro starts

Sample 2: All auctions since 2015

- Prozorro e-auction increased price by 93%
- SETAM *reduced price* by 21% & SGC org. by 38%

Implication: Reform was very effective; e-auctions should be reinstated even during war

II: Supporting Ukr. moves to qualify for EU accession

Establish SAR as EU-compliant payment system (w. IPRSA)

- Passage of regulations; finalization of SW UI, prod. Server, ongoing technical support
- Dissemination to local Gov'ts & producer associations; training of State Fund staff in SAR SW
- Daily monitoring of SAR sign-up & call center activity: 4630 support calls; 412 legal support requests
- Link to cadastral #s/parcel boundaries to automate risk-based compliance monitoring (w. JRC)

Land use monitoring, Land Parcel Management Information System (w. KPI/JRC)

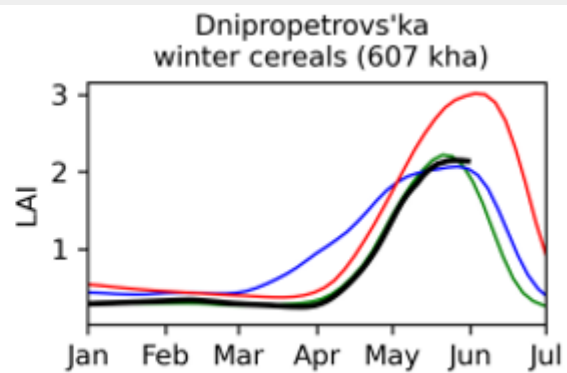
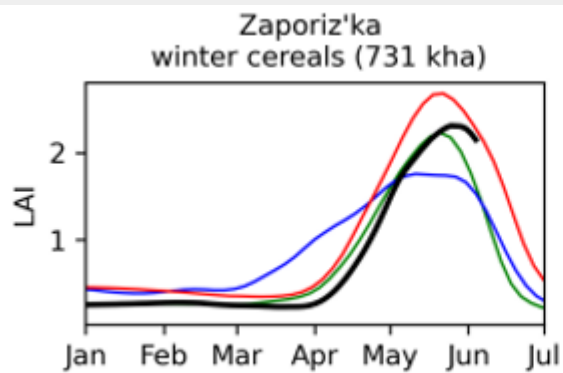
- Creation field map for 2019-22 based on Machine Learning; can be used to assess cadaster quality
- ML-based identification of wetlands (can be basis also for assessment of damages after war)
- Plan training of Ministry & partners in routine use of crop and land use map for other purposes as well
- Geoportal with access to crop maps (2019-22)

Finalize & implement time-bound plan for land parts of anti-corruption law

- Event to discuss draft subject to support from anti-corruption agency (tentatively Oct 13)
- Subsequent monitoring of progress with implementation & support

Machine learning for field delineation
~ 3.3 M fields delineated for the whole of Ukraine
For each of 2017-2022: synergise algorithm
For Sentinel-2 stacks of 15 May - 15 July

Use with LAI for yield estimation



An aerial Synthetic Aperture Radar (SAR) image of a rural landscape. The image is overlaid with a parcel delineation map, showing numerous small, irregular polygons representing land parcels. These parcels are colored in various shades of green, yellow, and red, likely representing different crop types or land use categories. The background is a grayscale SAR image showing the texture of the terrain, including fields, roads, and some buildings. A text box in the upper right corner provides context for the image.

Parcel delineation overlaid with crop map
Excellent basis for machine learning approaches
Can be used to validate land use info in SAR

III: Implement transparent producer support via SAR

Help MAPF to roll out & communicate 50 mn. PSG based on SAR

- Technical trouble-shooting & support to SPF checks (exception table)
- Communication with relevant stakeholders
- Link to private sector initiatives (MAPF facilitated access to price information, TA to farmers, etc.)
- Help MAPF promote use by other development partners

Evaluate PSG to identify lessons & use for other donors & private sector (banks)

- Ongoing monitoring sign-up & applications; draft evaluation design (depending on speed of sign-up)
- Small farmer baseline survey (n = 2,500) to be launched with KIIS
- Support to pilot SAR for grain storage (US\$ 67 mn) & EU investment grants
- Exploring options for pilot with banks or crop insurance

Link farmers to legal support & use this to explore court case monitoring

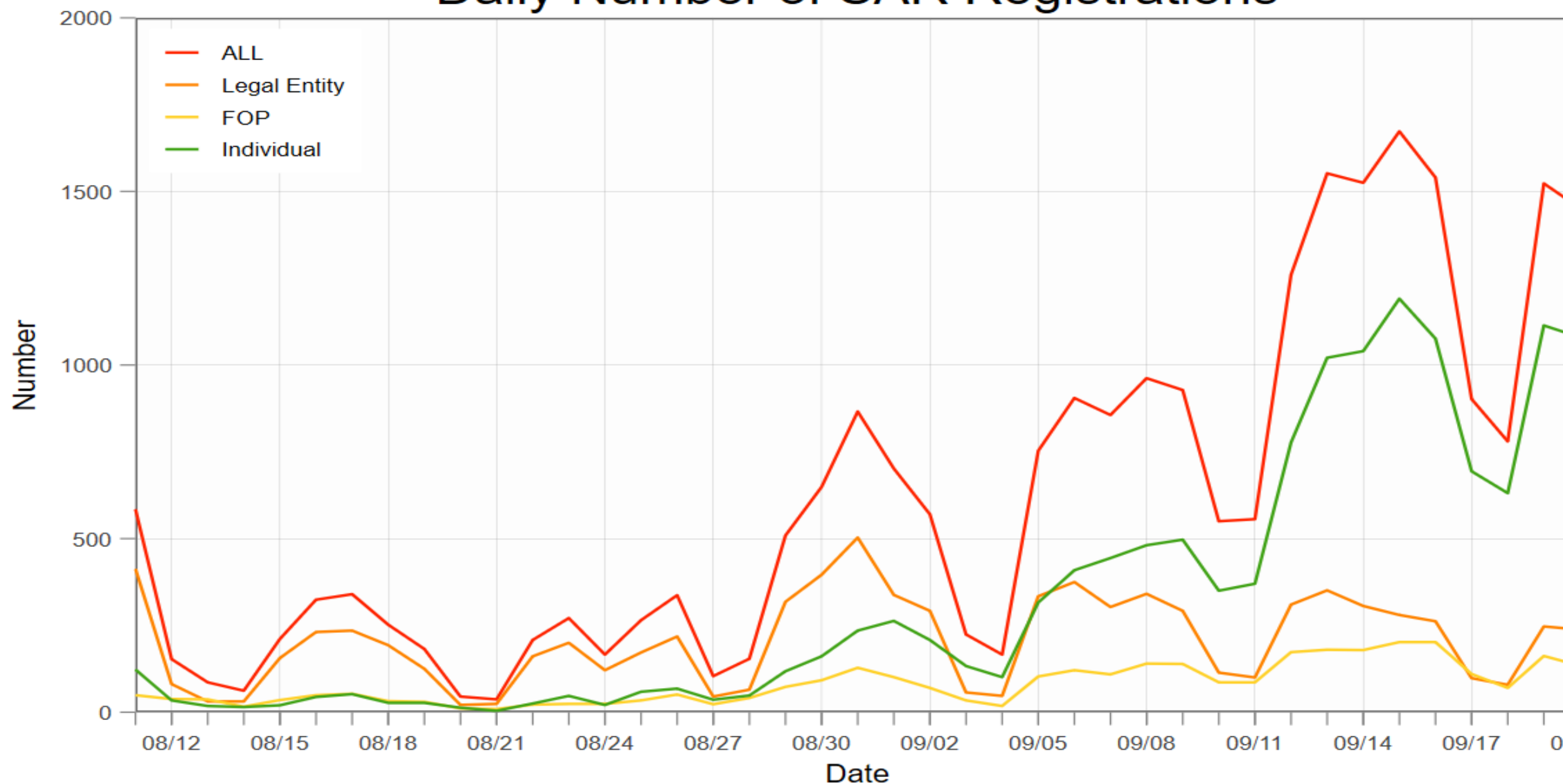
- Call center includes hotline to FLA for legal support with land disputes & any land-related issues
- Discussions with court administration to use this for automated tracking of court cases

Total SAR sign-ups & PSG applications

Region	Total	By type			By land size			
		L.Ent	FOP	Ind.	0-50	50-120	120-500	>500-
Central	8,777	3,847	1,350	3,580	0.72	0.17	0.08	0.02
East	1,029	420	266	343	0.68	0.16	0.12	0.03
North	2,375	1,223	481	671	0.70	0.15	0.11	0.04
South	4,460	1,372	638	2,450	0.81	0.11	0.07	0.01
West	3,738	1,574	527	1,637	0.83	0.10	0.06	0.02
Missing	4,839	70	28	4,741	0.98	0.02	0.00	0.00
Total	25,218	8,506	3,290	13,422	0.80	0.12	0.07	0.03

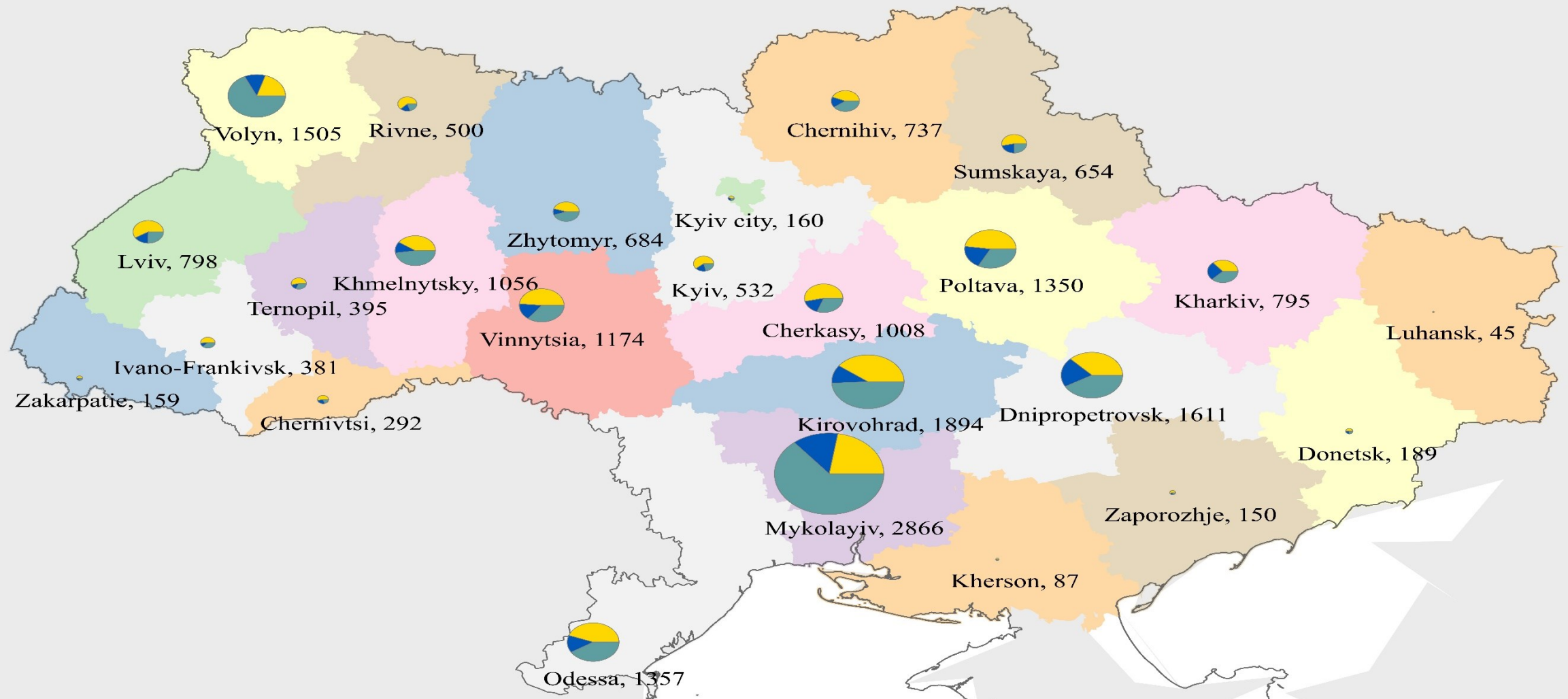
Close to 11,000 unique PSG applications for 35.5 mn. USD/Euro equivalent

Daily Number of SAR Registrations



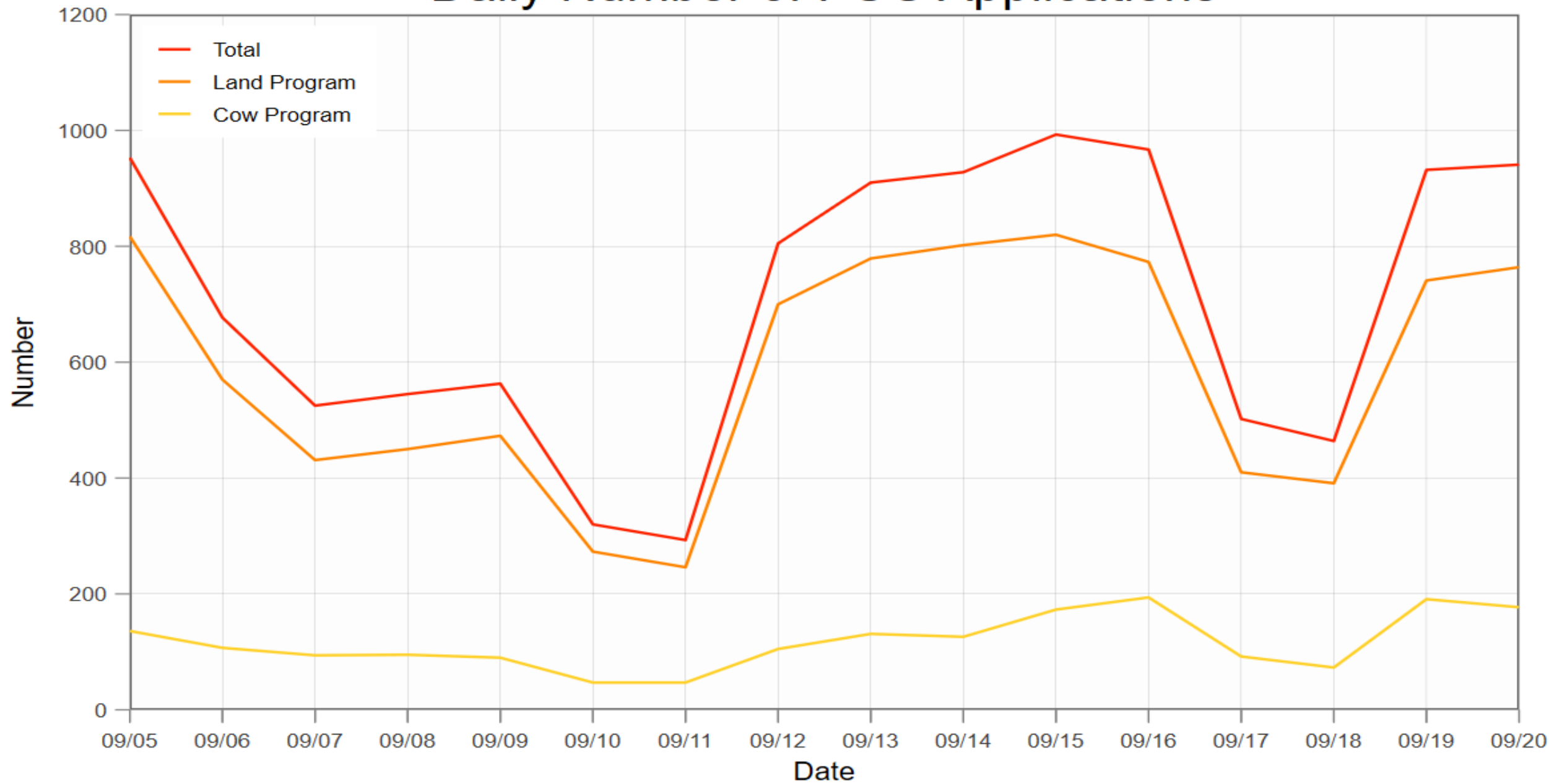
Last update: 09/21/2022

Total Number of SAR Registrations by Type

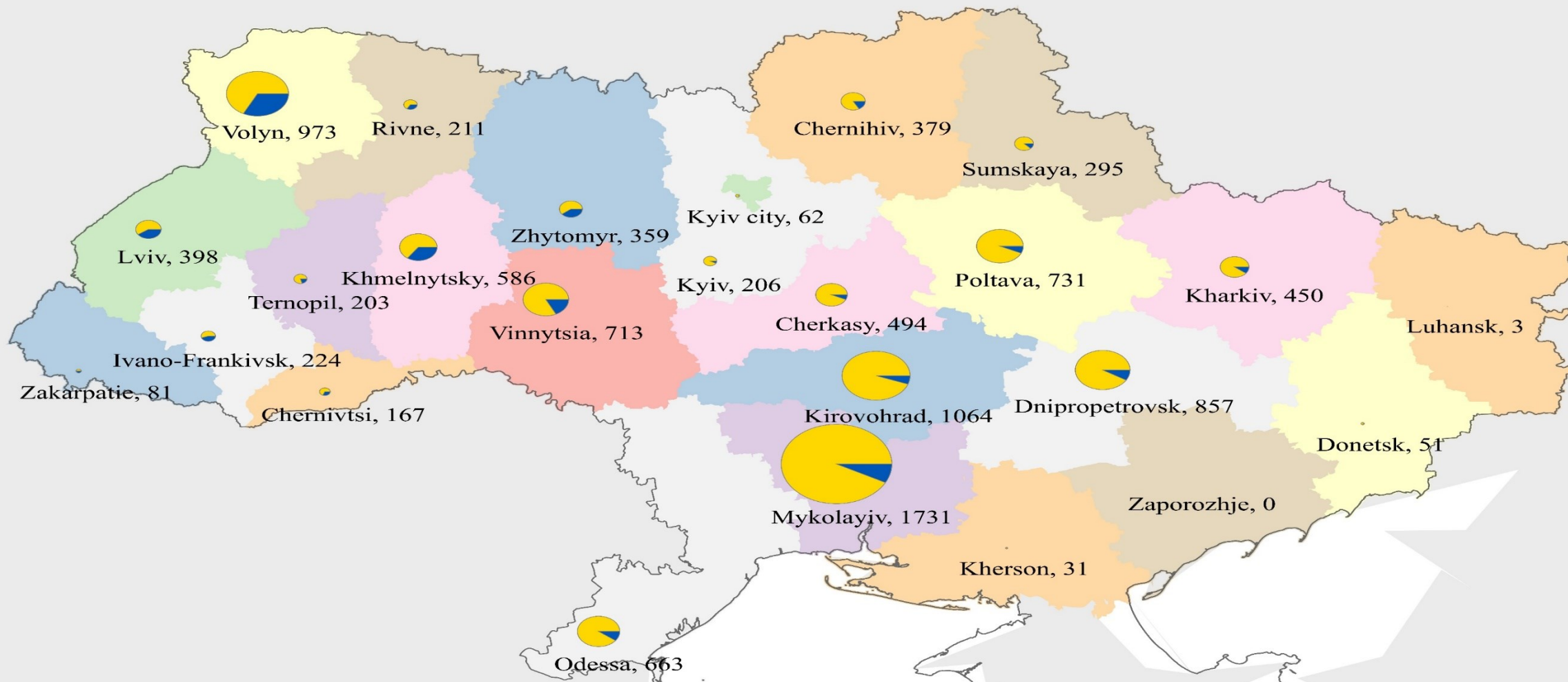


(Last update: 09/21/2022)

Daily Number of PSG Applications

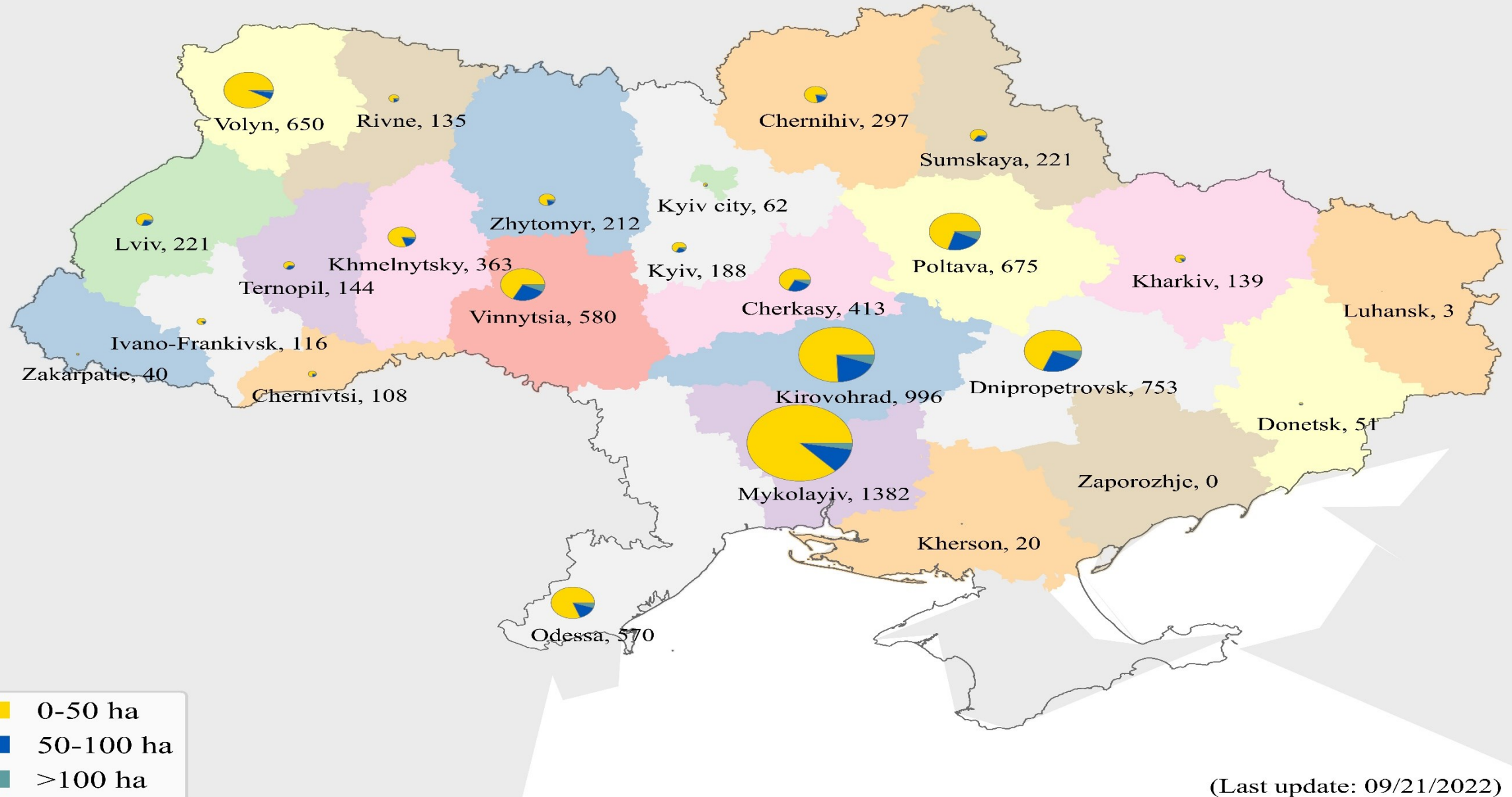


Total number of PSG applications by sub-program



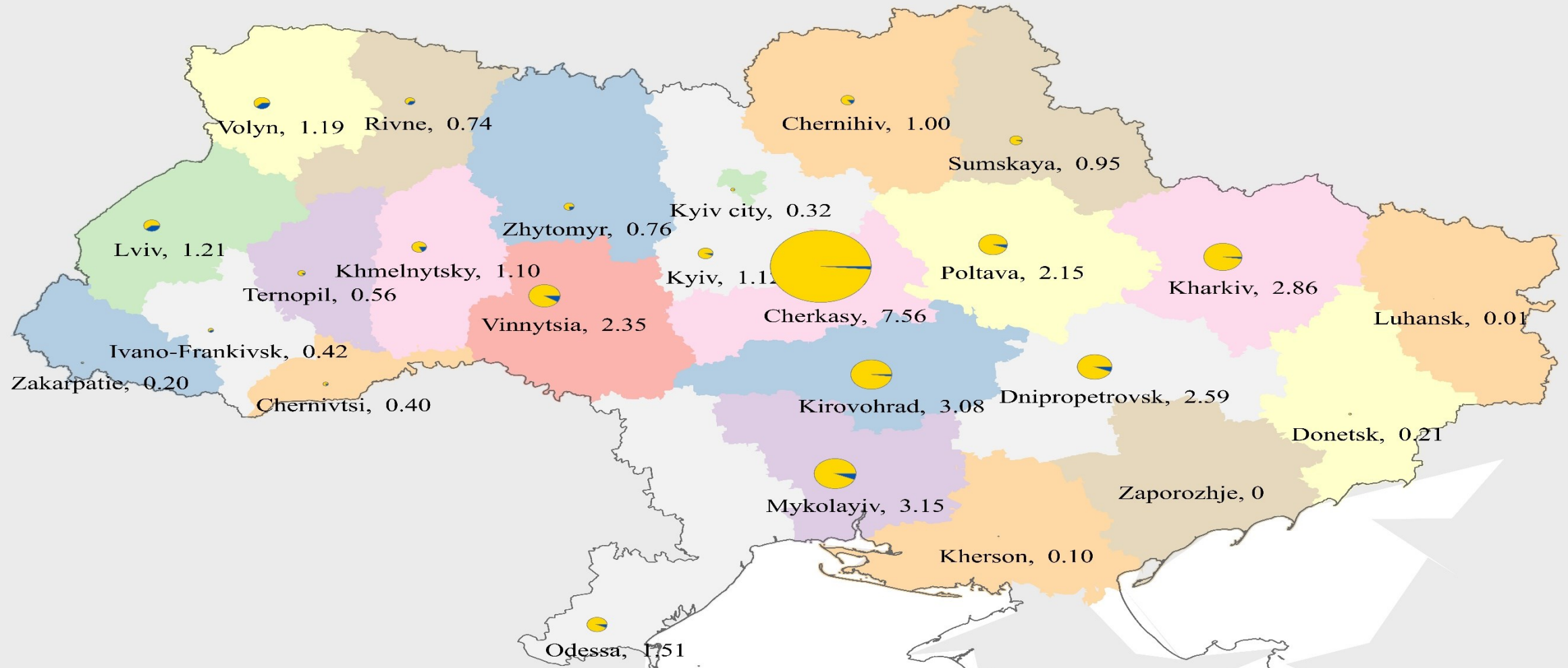
(Last update: 09/21/2022)

Total Number of Land Program Applications by Land Size



(Last update: 09/21/2022)

Total amount of PSG applications by sub-program (million USD)



(Last update: 09/21/2022)

III: Initial lessons/issues from SAR implementation

Legal ambiguity & gaps in quality/performance of state registries

- DDRP: Issues with API speed: Applications by farms exceed the limit while parcels are uploading
- Gaps in standardization & electronic coverage (pre-2013 Acts) reduces farmers' eligibility
- Permanent use right & inability to electronically register leases to public land under martial law
- Fiscal service has no DB of debts to Gov't or sanctions
- Creates additional work now but also provides opportunity for resolving these & other issues
- Gradually automating approval process will be a first step in this direction

Implementation & program eligibility

- Expansion to storage & investment grants possible but will increase workload
- Rejecting large # of small/indiv. applications from conflict-affected areas may cause negative publicity

Software & management of implementation

- List of SW issues identified during pilot roll out are addressed continuously
- Separate design document needed for PCG interface

Priority activities for coming 6 months

Institutionalize SAR as basis for state support administration & private sector links

- Evaluate SAR/PSG (initial assessment by Feb/March) & disseminate widely via events
- Strengthen MAPF capacity to maintain & build on SAR (ideally add layer automated crop checking)
- Use issues encountered to identify priority reforms to bring SGC & NAIS in line with EU standards
- Explore option for use by bank/PCG pilot once regulations are finalized

Strengthen capacity for data-based decision making & access to information

- Training of MAPF in use of remote sensing products for planning & improved service delivery
- Provide information & legal support on land and credit access to farmers; draw lessons for PCG

Build on anti-corruption law to drive reform agenda towards EU accession

- Debate implementation plan for land issues in anti-corruption law
- Basis for monitoring progress and identify any issues that need attention
- TA to DZK on request to enhance data protection & integrity in State Land Cadaster

Thank you!

K. Deininger with inputs from D. Ali, M. Fang, T. Hilhorst, T. Khorzovskaya, N. Kussul, A. Martin, D. Manzhura, O. Nivievskyi, V. Popov, V. Strakhova, A. Shelestov, G. Lemoine, F. Sedano, R. d'Andrimont, M. Claverie