Towards Wiser Reallotment Plans in Turkey

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Outline

• DSI’s Role
• Fact Finding
  – Turkish Stats
  – National Challenges - Migration/Food scarcity

• Computer aided trials

• Litop Land Consolidation Software
  – Specifications
  – New Version

• Trends in dealing Land Consolidation Datasets
• Other Related Studies
General Directorate of Water Hydraulic Works (DSI in Turkish acronym) is one of the legally authorized institutions for land consolidation in Turkey.

MAIN DUTIES of DSI
(Since 1954)
- Agriculture
- Energy
- Drinking Water Supply
- Environmental Planning

LC Since 2009
integrated land consolidation projects concerning irrigation, river reclamation and flood prevention have been accomplished.
Role of DSI: Integrating LCPs with Modern Irrigation Projects

- Keynote Of Modernization
- Implementing integrated LCPs with modern irrigation projects
- High expropriation costs

“Since 1954, DSI owned nearly the 1.1% of the country for hydrological investments which means the area same as Costa Rica and 850 318 hectares in numbers.”
Fact Finding: Turkish Stats

- Low income and high expenditures in farming.

- Half of the population immigrated to cities between 1974 and 2015. (TUİK)

- Great stress on planned urbanization

- Decrease at agricultural products. Regarding to the reports of this year, crop production is decreased of 9.3% on wheat, and 15.6% on barley with respect to the recent year.

Today 54% of world population is living in cities. In Turkey, 75% of total population lives in cities.
PART 2
Computerised Trials
• Early Trials started with the Nettop (first module of NetCAD) in the beginning of 80s
• Litop and LitopGIS (still leading in the sector)
• InterGIS (GIS engine with compact data cleansing features)
• Experimental trials (partial/unrealistic solutions)
  – ARTOP (A Group of Researchers from Uludağ Uni.)
  – LACIS
  – TopAZ (Reallotment Analysis)
  – ARGA (Automated Reallotment with Genetic Algorithms)
  – Some other algorithms of other researchers
“Litop works standalone or as a module of NetCAD”

http://www.lideryazilim.com/
"Litop works standalone or as a module of NetCAD"
LITOP Land Consolidation Software

"Reallocation Analyses for Individual Parcels"
• “Data Interoperability” (Import/Export features)
• “Data Cleansing Specification”
• “Setting Relationships”
• “Reallocation Specifications”
  – Manual progression
  – Automated with Rule-based Reallotment
  – Meta-heuristic Algorithms (new version)

• Analysis and Reporting Functionalities
• GIS capabilities included.
• Mostly coded with genuine resources
• Account management with regional restrictions and several authorization levels.
• Project monitoring and statistical reporting functions and dashboards for different user groups.
• A limited web version (restricted editing, querying and analysis options and especially for contractors concerning data uploads and downloads)
Modern Approaches of Data Science

Project characteristics leads redefined processes (datacentric)

- Which parcels deserve that block, which are not?
- Shape Improvements
- Inner Block Parcellation
- Block Designs
- Intelligent/Automated Reallotment
- New Indices and Indicators
- Deficits of current methods used in Calculations
• Adapting GIS, and Geostatistical methods to land consolidation work flow.
  – Code snippets/Tests
  – Integrated programming using GIS engines
  – Code optimization

• Data Mining

Data mining approaches are another applicable area for land consolidation data. For information extraction, uncover the hidden patterns from data can have worth in execution phase.
DSI has its own developer group, working on various topics. Application-independent web services (WMS/WFS) are in fashion. DSI has its own web services, so the data produced by DSI can be shared and used among various applications, both desktop and web-based.

Web applications created with JavaScript, HTML5 and CSS3 are compatible with RESTful web services either, and GeoJSON and GeoRSS also preferred structures.

Nowadays, a complete database study is in operation to define the data inventory of institution to program all activities efficiently and interconnect the applications in use.
Geoportal Application for representing hydrological data
Other Related Applications

Materials Quarry Information System
Other Related Applications

Inventory of Immovables Information System
Other Related Applications

Expropriation Information System
Other Related Applications

CitySurf Globe Software for Project Monitoring
CitySurf Globe can be used for data entries


www.tuik.gov.tr, Turkish Stats
Thanks for Your Attention!

http://en.dsi.gov.tr/