



WORKSHOP NATIONAL WOOD BALANCES

WOODFUEL BALANCES

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1. What does WISDOM mean?
2. How does WISDOM work?
3. How/where data is originated?
4. How is data organized ?
5. An example of WISDOM application
6. Conclusions
7. Recommendations

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1. What does WISDOM mean?

- **WISDOM** = Woodfuel Integrated Supply/Demand Overview Mapping
- **WISDOM** is the geographic representation of woodfuel production and consumption within a certain area = **WOODFUEL BALANCE**

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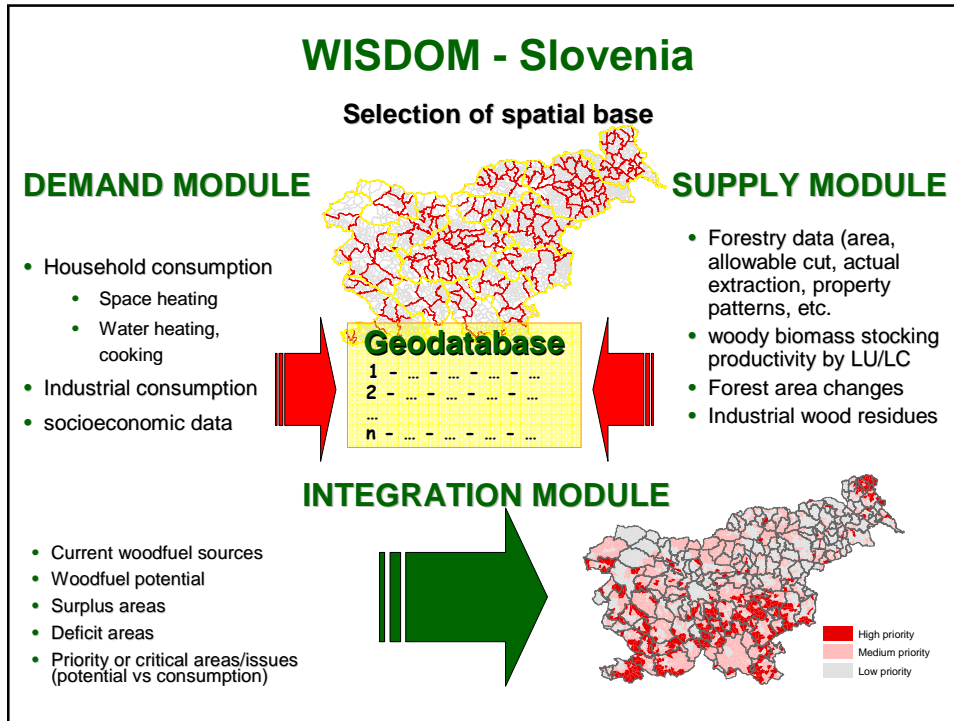


2. How does WISDOM work?

Wisdom consist of three modules:

1. Module of WF Consumption;
2. Module of WF Supply
3. Module of Integration - WF Balances

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3. How / where data is originated?

National & international DB from:

- Forest inventories & statistics;
- Energy balances & statistics;
- Technical papers;
- National census;
- Surveys;
- Expert consultations; and
- Others sources

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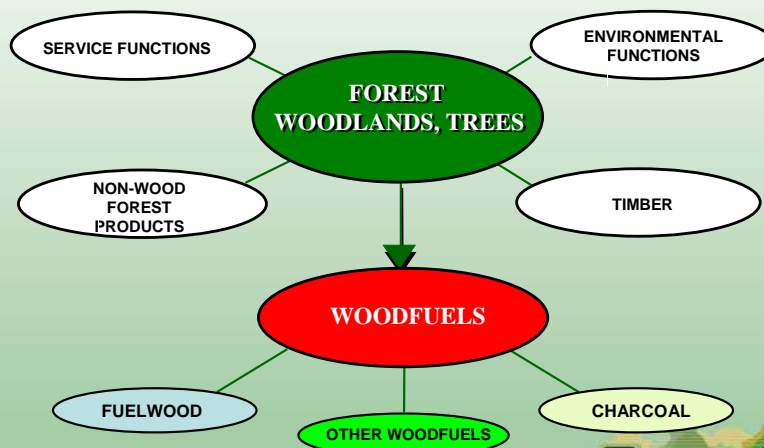
4. How is data organized?

production side, supply	major commodities	users side, biofuel examples
Direct woodfuels	WOODFUELS	Solid: fuelwood (roundwood, chips, sawdust), charcoal
Indirect woodfuels		Liquid: black liquor, ethanol
Recovered woodfuels		Gaseous: pyrolysis gas
Fuel crops	AGROFUELS	Solid: straw, stalks, huks, bagasse
Animal by-products		Liquid: ethanol, oil diester
Agroindustrial by-products		Gaseous: pyrolysis gas
	MUNICIPAL BY-PRODUCTS	Solid: municipal solid wastes
		Liquid: sewage sludge, pyrolytic oil
		Gases: biogas, pyrolytic gas



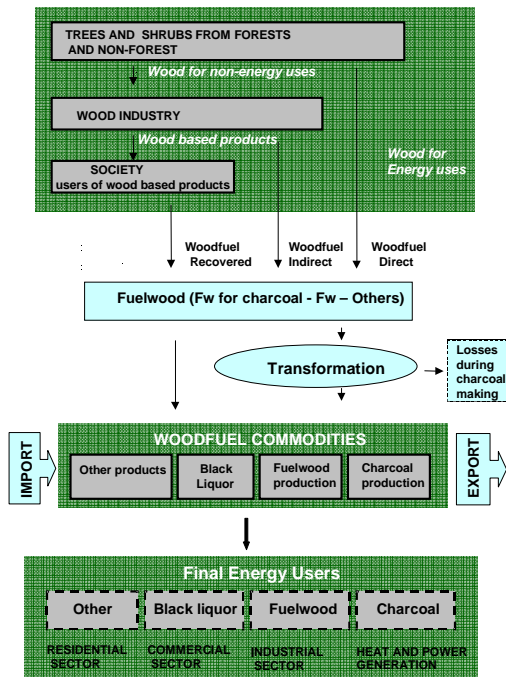
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Woodfuels and forest products



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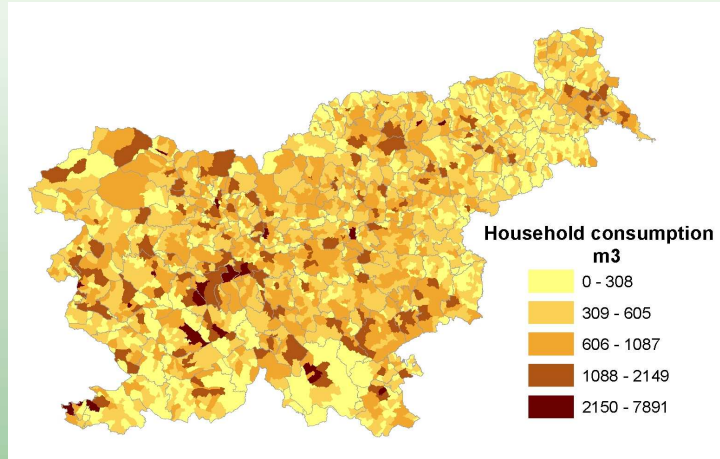


5. An example of WISDOM application

The screenshot shows the WISDOM application interface. On the left, a Microsoft Access database window displays the 'KOWISDOM19' database with a table named 'KOWISDOM19 Tabella'. The table contains various attributes such as 'Contatore', 'Coppetto OUE', 'STRO', 'IKO', 'INEXO', 'MAINOB_C00', 'MAINOB_NAM', 'AREA_HA', 'OKRAJ_SF', 'OKRAJ_ME', 'GGO', 'TOT_POP', 'URB_POP', 'INL_PRWF', 'SATURATION', 'TOT_DW_PRWF', 'GRS_M2_PRWF', 'M3_CONS_C', 'M3_CONS_H', 'M3_CONS_I', 'HEATED_M2', 'NETM3_CONS_C', 'NETM3_CONS_H', 'NETM3_CONS_I', 'BGP_FW_H', 'BGO_FW_H', 'BCUTFWSH', 'BCUTP_FWH', 'BCUTO_FWH', 'BGP_FW_HC', 'BGO_FW_HC', 'BCUTFWSHC', 'BCUTP_FWHC', 'BCUTO_FWHC', 'BGP_JFP_HC', 'BGO_JFP_HC', 'BCUTFWSP', 'BCUTP_FWSP', and 'BCUTO_FWSP'. The right side of the interface shows an ArcMap window with a map of a region colored in shades of yellow and orange. The 'Layers' panel on the right lists various data layers, including 'Location', 'Field', 'OBJECTID', 'Shape', 'SIRKO', 'KO', 'SATURA', 'no popu', 'BMECO', 'MAINOB_C00', 'MAINOB_NAM', 'OKRAJ_SF', 'OKRAJ_ME', 'AREA_HA', 'TOT_POP', 'URB_POP', 'INL_PRWF', 'POP', 'SATURATION', 'TOT_DW_PRWF', 'GRS_M2_PRWF', 'M3_CONS_C', 'M3_CONS_H', 'M3_CONS_I', 'HEATED_M2', 'NETM3_CONS_C', 'NETM3_CONS_H', 'NETM3_CONS_I', 'BGP_FW_H', 'BGO_FW_H', 'BCUTFWSH', 'BCUTP_FWH', 'BCUTO_FWH', 'BGP_FW_HC', 'BGO_FW_HC', 'BCUTFWSHC', 'BCUTP_FWHC', 'BCUTO_FWHC', 'BGP_JFP_HC', 'BGO_JFP_HC', 'BCUTFWSP', 'BCUTP_FWSP', and 'BCUTO_FWSP'. The 'Identity Results' window shows the values for the selected layer.



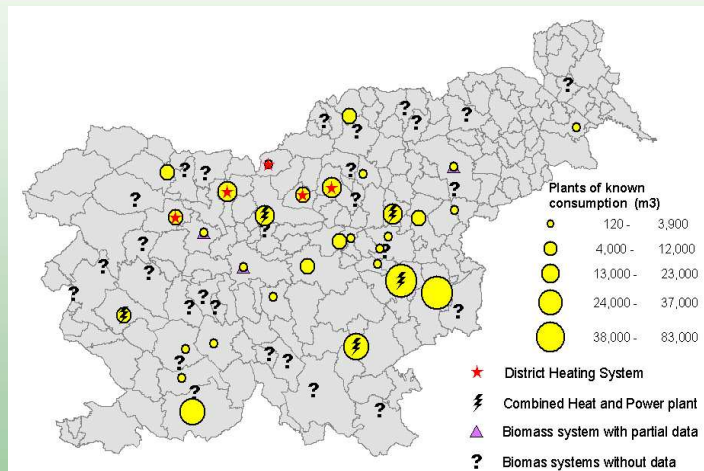
Demand module - households



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Demand module - industrial

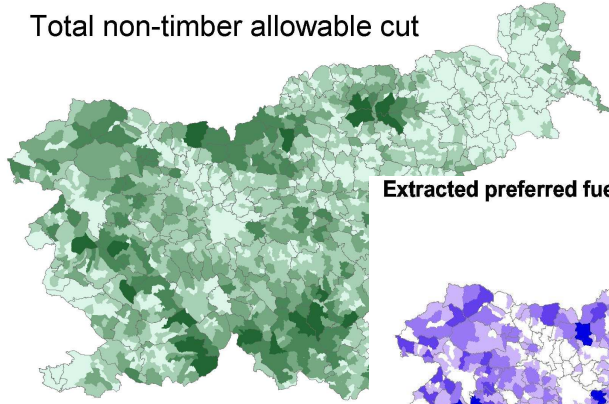


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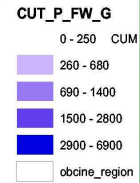
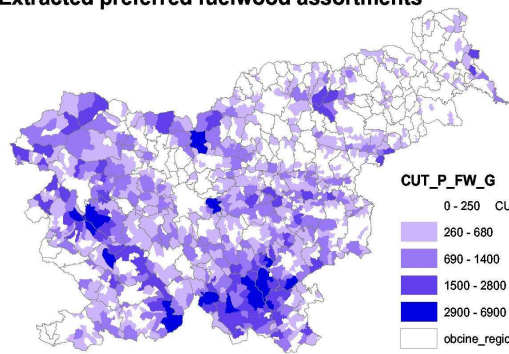


Supply module – WF resources

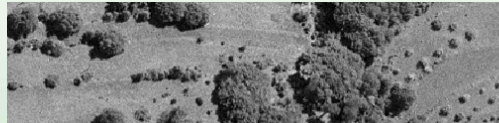
Total non-timber allowable cut



Extracted preferred fuelwood assortments



Supply module – Non-forest biomass

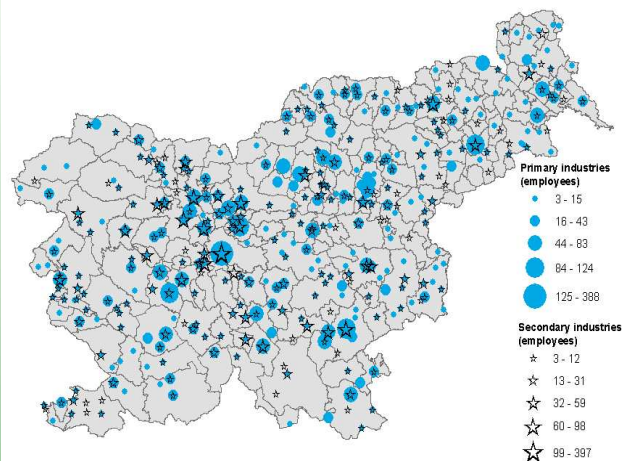


Land use classes	Total area	Total 4x4km points	Remarks	selection frequency	Selected points
Fields and gardens	213,985	136	Very low sample	1on4	32
Intensive orchard	5,049	2	All orchards	1on1	18
Extensive orchard	19,849	16	aggregated		
Intensive meadow	159,652	101	Low sample	1on2	42
Extensive meadow	187,930	118	Low sample	1on2	58
Re-growth on old farmland	25,246	11	double sample	2on1	28
Mixed use (agric. and forestry)	18,953	15	Full sample	1on1	15
Urban and built up areas, roads	108,194	68	Low sample	1on2	33
		471			227

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Supply module – Wood residues



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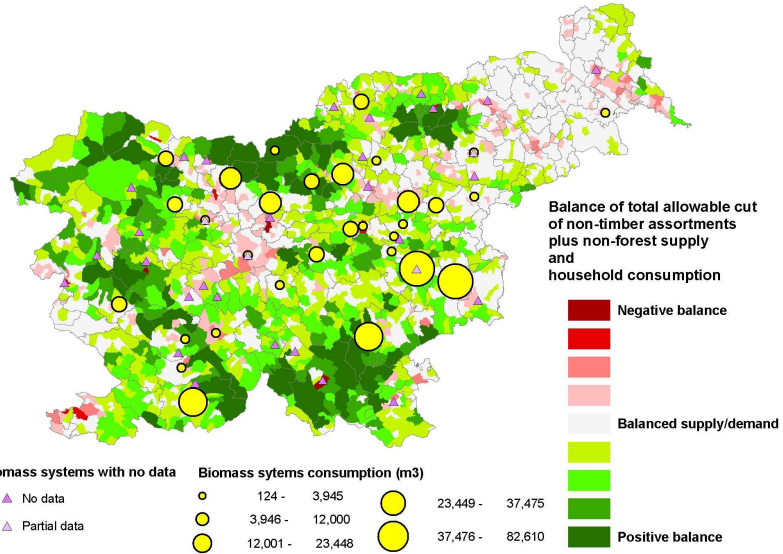
Integration module

- Current woodfuel sources
- Woodfuel potential
- Surplus areas
- Deficit areas
- Priority issues/zones

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Integration module

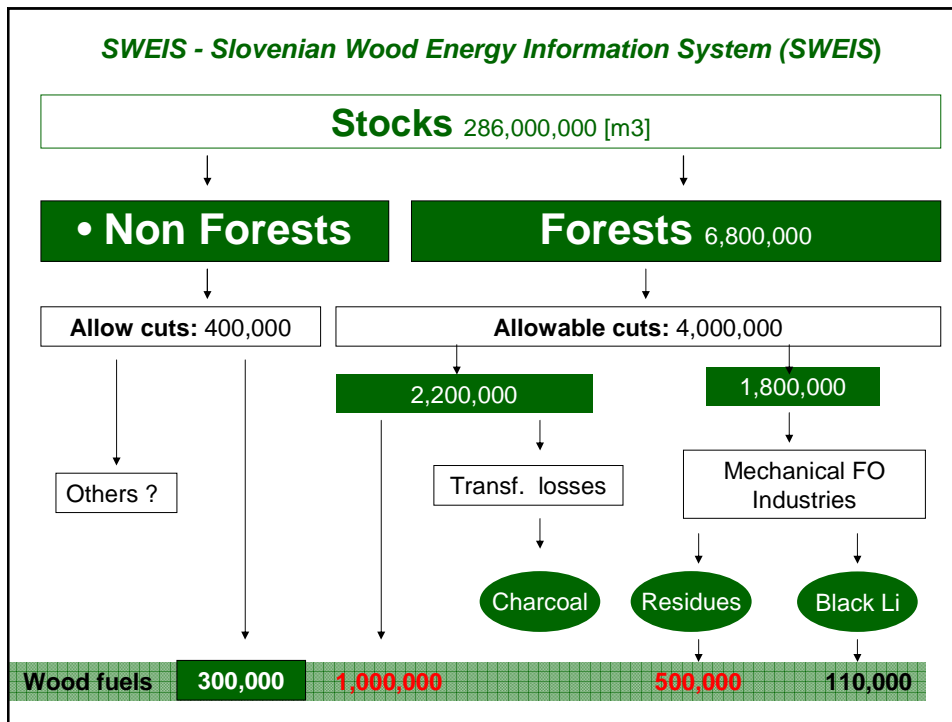


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SWEIS - Slovenian Wood Energy Information System (SWEIS)

Wood Fuel Consumption Analysis					
SUPPLY SOURCES		USERS			
		Residential		Commercial	Industrial
		Rural	Urban		
Forests	1,000,000	400,000	200,000	100,000	200,000
Non forests	300,000	140,000	100,000	60,000	
Residues	500,000	200,000	100,000		200,000
Black liquor	100,000				100,000
Total	1,900,000	740,000	400,000	160,000	500,000

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6. Conclusions

WISDOM is vital for:

- understanding WF flows;
- evaluating WE role in the forestry & energy sectors;
- assessing the energy use of forest products;
- assessing interrelations btw WF and forest products;
- identifying technical wood energy potential; and
- formulating WE strategies/adjust forestry programmes

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6. Conclusions

- The institutional capabilities are weak
- The approaches of “Forestry & Energy” are different
- The discrepancies of reported values are wide
- The terminology & definitions are rarely consistent
- The measurement units are different
- **The quantity and quality of data is grossly insufficient**

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7. Recommendations

- Update & upgrade WE-DB
- Harmonize WE definitions
- Establish inter-sectoral linkages
- Improve access to related DB

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<http://www.fao.org/forestry/site/energy>

<p>A guide for woodfuel surveys</p>  <p>FAO Publications of the Wood Energy Centre Woodfuel Use Assessment Programme 2004 128 pp. ISBN 92-5-105212-2</p>	<p>UBET</p>  <p>UNITED BIOENERGY TERMINOLOGY</p>	<p>Woodfuels integrated supply/demand overview mapping WISDOM</p>  <p>FAO Wood Energy Programme</p>	<p>FUELWOOD "HOT SPOTS" IN MEXICO A CASE STUDY USING WISDOM</p>  <p>FAO Wood Energy Programme</p>
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