Abbreviations used in the table: **Application:** EP - Energy Planning, ED - Energy Design. **Purpose:** S - Scenario, IDS - Investment Decision Support, ODS - Operation Decision Support, PSAT - Power System Analysis Tool. **Assessment Method:** S - Simulation, O - Optimization, LP - Linear Programming, NLP - Non Linear Programming, ABS - Agent Based Simulation. **Approach**: BU - Bottom-Up. **Supply Technology Capabilities:** PV - Photovoltaics, GSHP - Ground Source Heat Pump, TES - Thermal Energy Storage, CHP - Combined Heat and Power **Scale:** SP - Single Project, B - Building, L - Local, D - District, N - National, C - Continental. **Stakeholder:** M&UP - Municipal & Utility Provider, T&R- Technicians and Researchers, C - Consumers.

Software Tool	Developer	Application	Purpose	Assessment Method	Approach	Tool Focus	Supply Technology Capabilities	Time Scale	Scale	Stakeholder	Availability	Application in Practice and Research
EnergyPLAN	Aalborg University (DN)	EP	S, IDS, ODS	S, O	BU	Deterministic Input/Output model for long-range policy planning of heating, cooling, transportation energy demands and supply	Solar thermal, GSHP, TES, Boilers, CHP	Hourly	D, N, C	M&UP, T&R	Free, Open-source	IDA's Energy Vision 2050 [23] Zero Carbon Energy System in South East Europe in 2050 [68]
TRNSYS	Wisconsin University (US)	ED	PSAT	S, L/NLP	BU	Break down of single/small project energy systems into individual components	PV, Solar thermal, GSHP, TES, Boilers, Chillers, CHP	Sub-hourly	SP, B, D	M&UP, T&R	Commercial, Open-source	Optimum Design and Operation of an HVAC Cooling Tower for Energy and Water Conservation [47] Software-in-the-Loop-simulation of a District Heating System [48]
HOMER	NREL & DOE (US)	EP & ED	IDS, ODS	S, O	BU	Promoting the use of RES especially PV and wind for ON/OFF grid solutions	PV, Solar thermal, Concentrated solae, TES, Boilers, Chillers, CHP	Sub-hourly	B, L	C, T&R	Commercial, Closed-source	Optimal Sizing of a Hybrid System of Renewable Energy for Lighting Street [51] Techno-economic feasibility analysis of a solar-biomass off grid system [52]
THERMOS	Centre for sustainable energy (UK)	EP	IDS, ODS	ABS, O	BU	Map-based web tool that provides the methods, data and tools to accelerate development of low-carbon energy systems	GSHP, TES, Boilers, CHP	Hourly	SP, B, D	T&R, C	Free, Open-source	A combined spatial and technological model for the planning of district energy systems [72] Accelerating the development of low-carbon heating & cooling networks [55]
OpenModelica	Linköping University (SW) & OSMC	ED	PSAT	S, O, NLP	BU	Integration of HRES in small scale energy systems using individual components	PV, GSHP, Boilers, Chillers	Sub-hourly	SP, B, D	T&R	Free, Open-source	An Automated Approach to Building and Simulating Dynamic District Heating Networks [70] Building and Simulating Dynamic Models of District Heating Networks with Modelica [59]
DYMOLA	Dassault Systemes SE (FR)	ED	ODS	ABS, O	BU	A multi-engineering domain platform that uses mathematical equations to describe dynamic behaviour of system components	PV, GSHP, Boilers, Chillers	Sub-hourly	SP, B, D	T&R	Commercial, Open-source	Dynamic Simulation of District Heating Networks [76] Achieving lower district heating network temperatures using feed-forward MPC [77]
SAM	NREL & DO (US)	EP	IDS	S, O	BU	Performance and financial model for the generation and trading of electricity using RES	PV, Solar thermal, Concentrated solar, TES	Sub-hourly	SP, B, N	M&UP, T&R, C	Free, Open-source	Technical and Economic Analysis of a Grid Tied PV Plant [69] Simulation modelling of a concentrating solar thermal power plant [66]