CURRICULUM VITAE

Family name: TIRSU
First names: MIHAI
Date of birth: 27.02.1972
Nationality: Moldova
Civil status: Married
Education:

Institution (Date from - Date to)	Degree(s) or Diploma(s) obtained:
Technical University, Moldova 01/1989 - 07/1994	Dipl. Ing. Systems Automatization
Power engineering Institute, Moldova 01/1996 - 12/2003	Dr. Technical Sciences

Language skills: Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	Reading	Speaking	Writing
Romanian (mother tongue)	5	5	5
English	5	4	4
Russian	5	5	5

Membership of professional bodies:

1. Member of national energy experts Council at ANRE
2. Member of Moldavian Competent centre for using of renewable energy sources
3. Member of Scientific Council of Power engineering Institute
4. Member of Moldova Electrotechnical Committee

Other skills: (e.g. Computer literacy, etc.)

Computer literate. Computer tools: MATLAB, SIMULINK, LEAP, Excel, Word etc.

Present position: Director of Institute of Power Engineering
Years within the firm: 30

Key qualifications: (Relevant to the project)

Mr. Mihai Tirsu is a Dr. of technical sciences and has an experience of over 25 years in the energy sector. Currently he holds the position of Director of the Institute of Power Engineering of the Moldova, which is the only public research institution in Moldova and provides scientific support to the Ministry of Infrastructure and Regional Development (Government) in developing and implementing strategic documents in the energy sector such as: Energy Strategy of Moldova 2030, Energy balance forecast for short-term and long-term, National Energy Efficiency Plan, Electricity law, Energy Efficiency low, Renewable Energy law, etc. He has vast experience both as manager of international and national projects and as an executor. Also he has experience as an expert in several key projects in Moldova financed from European funds. The main research activities are related to studies for developing different scenarios for interconnection of power system of Moldova with ENTSO-E, elaboration of measures directed to strengthening and development of energy system, modelling of power system operation regimes, developing future scenarios,

analysis of power plant development both traditional and renewable, elaboration of recommendations for balancing the energy system in case of increasing intermittent generation sources (renewable), developing innovative equipment for directing the flow of power in transmission network. Results of research activities are provided in more than 180 scientific papers and patents.

Key qualifications include:

- In recent years Mr. Tirsu participated in various working groups within the Ministry of of Infrastructure and Regional Development in developing various policy documents in the field of energy, including national plan for efficiency and renewable energy (PNAERS).
- Consultant in "**Assessment of local power generation options in Moldova**" project. Project is financed by USAID and is implemented by Worley parsons company (USA). Tasks performed by Consultant: Assessment of existing CHPs and related DH facilities; Heat and Electricity Demand and Supply; Gas and Water Supply; Land and Structural Issues; Legal and Regulatory Considerations. Period of implementation 2018-2019.
- Verification expert in project "**Verification Consultant for DCFTA SMEs Programme**". The DCFTA programme for SMEs is a wide-ranging regional initiative of the EU, which aims to provide support to SMEs in the Eastern Partnership to tackle the challenges impeding them from reaching their full potential. Within this DCFTA-programme **Mihai** works as **Verification expert** under ALLPLAN sub-Consultant Agreement and verifies successful implementation of sub-projects after completion. Period of implementation 2016-ongoing.
- Lead expert in cross-border project Moldova – Romania "**Research and promotion of highly efficient energy generation through trigeneration by using solar renewable resources for getting electricity, heat and cold and purchasing of equipment**". The European Commission has approved the Joint Operational programme Romania-Republic of Moldova 2014-2020 on 17 December 2015. The project aims to stimulate the efficient use of renewable energy sources in the cross-border area. Period of implementation 2020-2022.
- Verification consultant in the project "**Impact Assessment Services under GGF Technical Assistance Facility, TAF activity No. 06/2019**". GGF TAF was a credit line that provide on-lending in clean energy projects in Moldova. Under GGF TAF the Consultant has been trained FI staff and providing Impact Assessment for the projects identified as eligible under imposed criteria. Period of implementation 2019-2021.
- Key expert in **District Heating Energy Efficiency Improvement Project (DHEIP) (Procurement Package No. 8451 - C3.5** "Technical Assistance for Environmental Audit of CHP-1 site") implemented by **Moldova Energy Project Implementation Unit (MEPIU).** *Period of implementation 2016-2017*
- Team leader for TAF PROJECT 16/2014: ENERGY AUDIT SERVICES project financed by Green for Growth Fund Southeast Europe (GGF). *Period of implementation 2015-2018*
- Energy consultant under the EU4Climate project "National Consultant on Gap Analysis against the EU Climate acquis implementation". **Key Responsibilities** of the Assignment: Contribution to development of the roadmap outlining EU4Climate support to the Republic of Moldova, expert contribution to national consultation workshop, including event preparatory work. Period of implementation 09/2019-12/2019.
- National Consultant in assessing policies and measures to mitigate climate change and develop GHG emission projections and assess the total effect of mitigation policies and measures at sector and category source levels (1A2 Manufacturing Industries and Construction) under the project "**THE FIFTH NATIONAL COMMUNICATION**". Period of implementation 07/2021-12/2021.
- National Consultant responsible for undertaking the peer review of Chapter 3 "Energy Sector" of the NIR under the project "Recruiting national consultants to undertake the technical peer

review of the sectorial chapters of the 'National Inventory Report: 1990-2019, Greenhouse Gas Sources and Sinks in the RM"'. Period of implementation 02/2021-03/2021.

- National Consultant in Climate Change Mitigation Activities in Energy sector (1A2 Manufacturing Industries and Construction) under the project "Republic of Moldova: Preparation of the Third Biennial Update Report (BUR3) to the United Nations Framework Convention on Climate Change (UNFCCC)". Period of implementation 10/2020-06/2021.
- National Consultant for attenuation of GHG and monitoring systems, reports and verification. Period of Implementation 2018 (Second biennale report);
- National Consultant for attenuation of GHG and monitoring systems, reports and verification. Period of Implementation 2017 (First biennale report);
- National Consultant and team leader for elaboration of NAMA (National Appropriate Mitigation Actions) on "Promoting Energy Efficient Light in Moldova" financed by UNDP. Period of implementation October, 2015 – December, 2016.
- National Consultant for preparation of the First Biennial Update Report and of the Fourth National Communication under the United Nations Framework Convention on Climate Change (UNFCCC),Service Contract NC4/2017/004/1206, February – May, 2017.
- National Consultant for elaboration of NAMA „Clinker substitution at cement production" ,Service Contract NC4/2017/004/1206, June – December, 2017.
- National Consultant for elaboration of "National Communication (NC4) and First Biennial Update Reports (BUR1) under the United Nations Framework Convention and Climate Change" financed by UNDP, Service contract No. 2014/003/1203.
- The non-key Senior expert in Technical assistance for the implementation of the Sector Policy Support Programme "Support to reform of the energy sector" (TA-SPSP Energy). Service Contract No.2012/294-811. In frame of this project Mr. Tirsu was responsible for elaboration of draft of road map for Energy Strategy 2030 implementation (only connection to ENTSO-E and ENTSO-G.
- The local expert for Project assessment and verification after successful implementation in frame of MoSEFF project (www.moseff.org) which is a 42 million Euro credit line that provides on-lending in sustainable energy projects in Moldova by EBRD.
- The project manager of INTAS project (FP7) "Research of wave processes in high voltage cables and localization of defects on base of partial discharges" during 2006-2008 period.
- The project manager of project "Development of the means, technical and technological solutions for an effective utilisation of traditional and renewable power resources for successful functioning of a power complex" started in 2015 and will be finished in 2018.
- Mr. Tirsu is authorised energy auditor and executing during last 3 years more than 30 contracts that allowed to increase energy efficiency of companies at least on 30-40%.
- The official representative of Moldova in Energy Programme Committee of H2020 Programme.

Specific experience in the region:

Country	Date from - Date to
Moldova	01.01.1994 – ongoing
Romania	09/2006-12/2006, 07/2007-10/2007

Professional experience

Date from - Date to	Location	Company& reference person[1] (name & contact details)	Position	Description
02/2015 - ongoing	Moldova	Institute of Power Engineering of Academy of Sciences of Moldova Ursachi Veaceslav e-mail: ssit@asm.md	Director	Management of institute research activities and scientific support of decision makers in energy sector
01/2018-ongoing	Moldova	Allplan GmbH Contact: DI Dr. Helmut Berger, Head of Dept. Energy & Environment e-mail: helmut.berger@allplan.at tel: 0043/1/5053707-94	Verification consultant	Expertise and support to successfully carry out the project "EU/EBRD DCFTA Programme for Georgia, Moldova and Ukraine – Verification Consultant"
12/2020-12/2022	Moldova	Institute of Power Engineering Contact: Postoronca Sveatoslav e-mail: sveatoslavpostoronca@gmail.com	Lead expert	Research and promotion of highly efficient energy generation through trigeneration by using solar renewable resources for getting electricity, heat and cold and purchasing of equipment.
05/2018-03/2019	Moldova	S.A. Termoelectrica "Heat production and distribution company" e-mail: **glingean@termoelectrica.md**	Manager	Analysis of the impact of individual thermal power plants (CTIs) on natural gas on public health and the environment
02/2018-02/2019	Moldova	WorleyParsons Gloup, Inc. (USA) Vladimir.Vaysman@worley.com	Moldova	Development of possible scenarios for construction of power stations in Moldova
03/2016 – 03/2017	Moldova	BT-Engineering Ltd and Energplan Robu Sergiu e-mail: sergiu.robu@asm.md	Key expert	Elaboration of scenarios for electrical part of CHP-1

[1] The Contracting Authority reserves the right to contact the reference persons. If you can not provide a reference, please provide a justification.

01/2010 – 12/2016	Moldova	Allplan GmbH Contact: DI Dr. Helmut Berger, Head of Dept. Energy & Environment e-mail: helmut.berger@allplan.at tel: 0043/1/5053707-94	Local expert	**Verification the accuracy of the energy audits performed by** Fichtner GmbH & Co and **verification of the implemented measures and obtained results** for more of 300 projects
03/2015-03/2018	Moldova	Finance in Motion GmbH Germany Elena Yunatska : e.yunatska@finance-in-motion.com	Team leader	Capacity building of personal from financial institution in energy efficiency and performing of energy audits
02/2017 – 12/2017	Moldova	UNDP, Climate change Office Scorpan Vasile tel. +373 22 232247	National Consultant	Development of the National Appropriate Mitigation Actions (NAMAs) for Replacement of Clinker at cement production.
10/2015 – 12/2016	Moldova	UNDP, Climate change Office Scorpan Vasile tel. +373 22 232247	National Consultant, team leader	Development of the National Appropriate Mitigation Actions (NAMAs) for Replacement of Incandescent lamps by energy efficient lamps of LED type.

Other relevant information

Publications

COMENDANT Ion, **TIRSU Mihai.** Identifying medium and long-term solutions to cover electricity demand of the R. of Moldova. *WEC CENTRAL & EASTERN EUROPE REGIONAL ENERGY FORUM – FOREN 2022*. 12-15 June 2022, Costinești, Romania, 10 pages

TIRSU M., COVALENCO N., NEGURA I, ZAITEV D., GAVRILAS M, NEAGU B., The photovoltaic-thermal panel systems as way for increasing energy security. (203), *CIGRE Regional South-East European Conference - RSEEC 2022 (6th edition) October 18th - 20th 2022*, "Gheorghe Asachi" Technical University Iași, Romania https://rseec2022.org/wp-content/uploads/2022/10/Agenda-RSEEC-2022_online.pdf

LUPU M., ZAITSEV D., TIRSU M., GOLUB I., Влияние ветрогенерационных установок на режимы работы распределительной сетию., Problemele Energeticii Regionale 2 (54) 2022 Electroenergetica pp.63-73. https://doi.org/10.52254/1857-0070.2022.2-54.06 UDC: 621.316.13
TÎRȘU M., POPESCU V., BALAN M., KURDOV I.S., BALAN T.V., ROTARI V.V. Fluidized Bed Seed Dewatering System. PROBLEMELE ENERGETICII REGIONALE 2 (54) 2022

L.P. Kalinin; D.A. Zaitsev; M.S. Tirsu; I.V. Golub; D.N. Kaloshin. Functional Characteristics of a Multichannel Frequency Converter. 2021 9th International Conference on Modern Power Systems (MPS). DOI: 10.1109/MPS52805.2021.9492664. https://ieeexplore.ieee.org/document/9492664

Kalinin L.P., Zaitsev D.A., Tirsu M.S., Golub I.V., Kaloshin D.N. Controlled Intersystem Link Based on a "Hexagon" Scheme Converter. PROBLEMELE ENERGETICII REGIONALE 1 (49) 2021. DOI: https://doi.org/10.52254/1857-0070.2021.1-49.11. https://journal.ie.asm.md/assets/files/02_01_49_2021.pdf

Mihai TÎRȘU, Mihai Lupu. The impact of individual thermal stations on the environment and public health of the population. **WEC CENTRAL & EASTERN EUROPE REGIONAL ENERGY FORUM – FOREN 2020** 14-18 June 2020, Vox Maris Grand Resort, Costinesti, Romania.

CALININ L.P., ZAITSEV D.A., TIRSU M.S., GOLUB I.V. Investigation of the possibilities of increasing the frequency converter efficiency based on the phase-shift transformer. 2019 8th International Conference on Modern Power Systems (MPS), 21-23 May 2019, Cluj-Napoca, Romania, **DOI:** 10.1109/MPS.2019.8759785, https://ieeexplore.ieee.org/document/8759785.

TÎRŞU M., UZUN G. Renewables as important energy source for Moldova. The Eurobiotech Journal, Review, Enviromental technology, © 2018 European Biotechnology Thematic Network Association, Volume 2, Issue 1, p.1-6.

TÎRŞU M., CALININ L., ZAIŢEV D., GOLUB I., KALOSHIN D. Means and methods for active and reactive power exchange/regulation. Monografie, LAMBERT Academic Publishing, OmniScriptum GmbH & Co. KG , Haroldstr. 14, pp.137.

19 January 2023

TÎRŞU, M., ZAIŢEV, M., GOLUB, I., CALININ, L., LAZAROIU, Gh. *Estimation of the Wind Power Plants Capacity to be Integrated in Actual Power System of Moldova.* Proceedings of The 11th International Conference on Electromechanical and Power Systems (SIELMEN 2017), 11 October 2017 Iasi / 12-13 October 2017, Chisinau, pp.223-226, http://ieeexplore.ieee.org/document/8123322/, **DOI:** 10.1109/SIELMEN.2017.8123322

CIUPĂGEANU, M., LĂZĂROIU, Gh., TÎRŞU, M. *Carbon Dioxide Emissions Reduction by Renewable Energy Employment in Romania.* Proceedings of The 11th International Conference on Electromechanical and Power Systems (SIELMEN 2017), 11 October 2017 Iasi / 12-13 October 2017, Chisinau,pp.281-285,http://ieeexplore.ieee.org/document/8123333/,
DOI: 10.1109/SIELMEN.2017.8123333

Kalinin L.P., Zaitsev D.A., Tirsu M.S., Golub I.V., SIMULATION OF THE MODE OF FREQUENCY ADJUSTABLE ELECTRIC CONNECTION, WEC CENTRAL & EASTERN EUROPE ENERGY FORUM – FOREN 2016, Costineşti, Romania, 12-16 June 2016

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