

# South East Europe 2050 Energy Model

Showing the way to a fairer, cleaner, more  
efficient energy system in South East Europe!

## Scenario Authors



### Dr. Daniel M. Kammen

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*Director of UC Berkeley's Renewable and Appropriate Energy Lab*

Dr. Kammen is the Class of 1935 Distinguished Professor of Energy at the University of California, Berkeley, with parallel appointments in the Energy and Resources Group, the Goldman School of Public Policy, and the department of Nuclear Engineering. He was appointed the first Environment and Climate Partnership for the Americas (ECPA) Fellow by Secretary of State Hillary R. Clinton in April 2010.

Kammen is the founding director of the Renewable and Appropriate Energy Laboratory (RAEL), Co-Director of the Berkeley Institute of the Environment, and Director of the Transportation Sustainability Research Center. He has founded or is on the board of over 10 companies, and has served the State of California and US federal government in expert and advisory capacities.

Dr. Kammen was educated in physics at Cornell and Harvard, and held post-doctoral positions at the California Institute of Technology and Harvard. He was Assistant Professor and Chair of the Science, Technology and Environmental Policy Program at the Woodrow Wilson School at Princeton University before moving to the University of California, Berkeley. Dr. Kammen has served as a contributing or coordinating lead author on various reports of the Intergovernmental Panel on Climate Change since 1999. The IPCC shared the 2007 Nobel Peace Prize. He serves on the Advisory Committee for Energy & Environment for the X-Prize Foundation.

During 2010–2011 Kammen served as the World Bank Group's Chief Technical Specialist for Renewable Energy and Energy Efficiency. He was appointed to this newly created position in October 2010, in which he provided strategic leadership on policy, technical and operational fronts. The aim is to enhance the operational impact of the Bank's renewable energy and energy efficiency activities while expanding the institution's role as an enabler of global dialogue on moving energy development to a cleaner and more sustainable pathway.

He has authored or co-authored 12 books, written more than 300 peer-reviewed journal publications, testified more than 40 times to U.S. state and federal

congressional briefings, and has provided various governments with more than 50 technical reports. Dr. Kammen also served for many years on the Technical Review Board of the Global Environment Facility. He is a frequent contributor to or commentator in international news media, including *Newsweek*, *Time*, *The New York Times*, *The Guardian* and *The Financial Times*. Kammen has appeared on *60 Minutes* (twice), *Nova*, *Frontline*, and hosted the six-part Discovery Channel series *Ecopolis*. Dr. Kammen is a Permanent Fellow of the African Academy of Sciences, a fellow of the American Physical Society.

## Noah Kittner

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*Researcher at UC Berkeley's Renewable and Appropriate Energy Laboratory*

Noah Kittner is a PhD student in the Energy and Resources Group at UC Berkeley and researcher in the Renewable and Appropriate Energy Laboratory. After graduating with a BS in Environmental Science from UNC-Chapel Hill (highest honors), Noah was a Fulbright Fellow at the Joint Graduate School for Energy and Environment in Bangkok, Thailand researching technical and policy aspects of solar electricity and sustainability assessment. Recently, he co-authored a Thai Solar PV Roadmap with colleagues at Chulalongkorn University.

He has worked on renewable energy issues in a variety of contexts, including measuring land use change and biomass fuel uses in western Uganda, installing solar panels in Mexico, and electricity grid modeling in Kosovo. He is supported through the Berkeley Center for Green Chemistry as a SAGE-IGERT fellow, National Science Foundation as a Graduate Research Fellow, USAID, and has won an award from the National Go Solar Foundation for his work on solar photovoltaics.



## Barney Jeffries

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*Writer and Editor*

Barney Jeffries is an experienced writer and editor specializing in environmental issues. He writes extensively for WWF, and worked on a number of high-profile publications, including:

*Living Planet Report* (2014, lead author)

*Making Better Production Everybody's Business* (2014, lead author)

*Living Forests Report* (2012, editorial consultant)

*The Energy Report* (2011, lead author, part I)

In addition to working on *The Energy Report*, Barney has produced communications materials for the WWF Global Climate and Energy Initiative, written web copy and blogs on renewable energy for WWF-UK, and authored a report on bioenergy for the New Generation Plantations platform.



## Energy Experts



### Dr. Eng. Besim Islami

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#### *Energy and Climate Change Consultant*

Dr. Besim Islami has 25 years of professional experience in a number of energy sector related areas, including: carry out energy planning, preparing GHG inventory (knowing very well IPCC methodology and common reporting format), GHG mitigation scenarios (using LEAP and GACMO models), climate change adaptation scenarios, different studies related to the development of RES and EE policies and strategies, considering at all times GHG emission reduction; preparation of feasibility studies including technical, financial, and environmental impact of energy projects including big, medium and small hydro power plants, wind power plants, biomass energy, solar energy, geothermal energy; green house gas inventory; mitigation of green house gases scenarios through RES and EE penetration scenario using the LEAP, GACMO, RETScreen® and MARKAL software; and lecturing at university level EE, RES, environmental impact from energy source utilization chain, and cost-benefit analysis of EE and RES projects.

Dr. Islami has 22 years of working experience as a key expert for preparation of energy policies and energy strategies for Albania and Kosovo and participating as a team expert for the development of energy policy and energy sector development scenarios for almost all countries of the Western Balkans. Dr. Islami is the founder of first energy balances according to EUROSTAT format, forecasting of energy demand in general and electricity in particular for Albania (since 1996) and Kosovo (since 2003) and renewable energy sources (RES) data base. Dr. Islami worked for the Government of Albania as the Chairman of the National Agency for Energy for 10 years and since 2005 he is working regularly on different projects in Kosovo as well. He has gathered great experience working in Albania, Kosovo, Serbia, Montenegro, Macedonia, Croatia, Bulgaria, Rumania, Turkey, Russia, Ukraine, Georgia, Bolivia and Ecuador. He has also worked with a number of bilateral donors and multilateral financial institutions including the European Commission (IPA, CARDS and EAR), KfW, the World Bank, the European Bank for Reconstruction and Development (EBRD), GTZ, USAID, USTDA and UNDP.



## M. Sc. Tomislav Pukšec

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*Research Assistant at the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb*

Tomislav Pukšec graduated from the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, in 2008, and he is employed there since 2009, at the Department of Power Engineering, Energy and Environment as a research assistant and PhD student. He is working on various projects dealing with energy efficiency and renewable energy sources (EU projects: IEE, FP7, IPA, MED, Horizon and national projects: Croatian Science Foundation, industry, local government, etc.).

He is the author of 32 scientific papers, of which 13 were published in scientific journals. He has been awarded two scientific scholarships: Croatian Science Foundation (Aalborg University) and Erasmus Mundus for PhD students (American University of Beirut). He is a recipient of an award given by The Society of University Teachers, Scholars and other Scientists of Zagreb University for best young scientists and artists in the year 2012, in the technical field category.



## M. Sc. Aleksandar Dedinec

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*Research Assistant at the Research Center for Energy and Sustainable Development of the Macedonian Academy of Sciences and Arts (ICEIM-MANU)*

Aleksandar is an expert modeller and analyst, specialized in the energy and climate change sectors. At present he is a research assistant at the Research Center for Energy and Sustainable Development of the Macedonian Academy of Sciences and Arts (ICEIM-MANU) and a PhD candidate at the Faculty of Electrical Engineering and Information Technologies. He holds a Master of Science in Electrical Engineering and Information Technologies. He is one of the leading people on the MARKAL energy strategy modelling in Macedonia.

He has been participating in more than 13 projects related to energy strategies, energy efficiency and renewable energy sources, as well as climate change, including: GHG inventories, climate change mitigation in various sectors, energy efficiency and GHG emissions indicators, and strategic energy planning. He is author and co-author of 5 scientific papers published in journals with impact factor and 14 papers published in proceedings.

Aleksandar Dedinec has also worked as a local consultant for TETRA TECH and WINROCK on projects financed by USAID, Energy Agency of the Republic of Macedonia, E4TECH, Regional Environmental Center (REC)... He is a member of the Association of Energy Engineers (AEE) and International Centre for Sustainable Development of Energy Water and Environment Systems (SDEWES). He is also experienced in computer science, robotics, and automation.



## Michel Cornet

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### *Energy and Climate Change Manager at Climact*

Michel Cornet is the Energy and Climate Change Manager at Climact since 2009, and supports companies, NGO's and governments on energy and climate change.

He currently supports several countries in Western Europe, Eastern Europe and North Africa to set pathways towards a low-carbon society. He also leads the manufacturing analysis of the [Global Calculator](#) project that will be intensively used during the 2015 Paris COP.

Earlier, while at A.T. Kearney, he focused on strategy (corporate and functional) and on operations (complexity management). Prior to that, he worked in microfinance both on the field and serving the United Nations.

Michel is trained as a computer science engineer with a focus on entrepreneurship. He also provides various university lectures on energy and climate change.



## Guy Turner

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### *Founder and CEO of Trove Research Ltd*

Guy Turner is an experienced economist with an environmental conscience, entrepreneurial flair and passion for delivering growth. He is the founder and CEO of Trove Research Ltd, a start up to help companies make better use of published research. He is also the non-executive director at Rezatec Ltd to guide product strategy, and a visiting Research Associate at Oxford University's Smith School of Enterprise and the Environment working on their Stranded Assets Programme.

He was previously Head of Economics and Commodity Research at Bloomberg New Energy Finance, responsible for managing research products in the power, gas and carbon markets, and long term economic forecasting. He joined the New Energy Finance (NEF) in the start-up phase in 2006 to set up New Carbon Finance (NCF) – the business dedicated to analyzing the world's carbon markets – now the leading provider of this analysis worldwide. NCF absorbed into NEF which was successfully sold to Bloomberg in December 2009. He is the member of Barclays Environmental Index Committee, and founder member of Carbon Markets & Investors Association.

## Spiritual father of the My 2050 Calculator



### Professor David J. C. MacKay

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*Regius Professor of Engineering in the Department of Engineering at the University of Cambridge*

MacKay is the Regius Professor of Engineering in the Department of Engineering at the University of Cambridge and from 2009 to 2014 was Chief Scientific Adviser to the UK Department of Energy and Climate Change (DECC). Before being appointed to the DECC, MacKay was most well known as the author of the book *Sustainable Energy – Without the Hot Air*.

David represented Britain in the International Physics Olympiad in Yugoslavia in 1985, receiving the first prize for experimental work. He went up to Trinity College, Cambridge, and received a Bachelor of Arts in Natural Sciences (Experimental and theoretical physics) in 1988. He went to the California Institute of Technology (Caltech) as a Fulbright Scholar. His supervisor in the graduate program in Computation and Neural Systems was John Hopfield. He was awarded a PhD in 1992.

In January 1992 MacKay was made the Royal Society Smithson Research Fellow at Darwin College, Cambridge, continuing his cross-disciplinary research in the Cavendish Laboratory, the Department of Physics of the University of Cambridge. In 1995 he was made a University Lecturer in the Cavendish Laboratory. He was promoted in 1999 to a Readership, in 2003 to a Professorship in Natural Philosophy and in 2013 to the post of Regius Professorship of Engineering. He was elected a Fellow of the Royal Society in May 2009.

MacKay's contributions in machine learning and information theory include the development of Bayesian methods for neural networks, the rediscovery (with Radford M. Neal) of low-density parity-check codes, and the invention of *Dasher*, a software application for communication especially popular with those who cannot use a traditional keyboard. His book *Information Theory, Inference, and Learning Algorithms* was published in 2003.

## Regional Energy Model Team

### Ana Ranković

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Ana Ranković from NGO Fractal (Serbia) supports collaboration within the SEE SEP team and alignment of national modeling efforts through ongoing facilitation, communication and data management assistance. Her contribution also includes research in buildings energy efficiency and low carbon transport solutions. She is a co-founder and member of NGO Fractal since 2001 where she has initiated and led a number of dialogue programs designed to improve communication, trust and cooperation in the Western Balkans region, including support for cross-border community partnerships for sustainable use of natural resources and pollution prevention. Her areas of work also include citizen participation, gender, conflict sensitivity and development.

### M. Sc. Naida Taso

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Naida Taso is an Energy Specialist at SEE Change Net since 2012, working on the South East Europe Sustainable Energy Policy (SEE SEP) Programme as support for national teams in energy modeling. She studied at the Faculty of Electrical Engineering at the University of Sarajevo. She has completed both her Bachelor's and Master's degree in Renewable Energy (Geothermal Energy and Small Hydro Power Plants).

### Ivana Rogulj

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Ivana Rogulj has a Master's Degree in Electrical Engineering (Energy Systems), and she is currently finishing her postgraduate specialization in Eco engineering. She has 8 years of experience in the field of sustainable energy, with 6 of them spent working as Project Manager, AD and Head of Marketing and Information Department in the energy service company ESCO. She has numerous trainings and additional education in the area, including certificates for measurement and verification of energy efficiency projects and building performance.

She is currently working in the Croatian CSO Society for Sustainable Development Design (DOOR) as a Project Manager for sustainable and renewable energy, energy poverty and natural resources management related projects. She was also a member of the working group for transposition of EPBD directive and is working on projects related to the implementation of EU legislation, currently on project REACH (Reduce Energy and Change Habits), with the objective of creating energy poverty regulation in Croatia.



## Irma Filipović

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Irma Filipović gained her Master's degree at the Faculty of Electrical Engineering in Sarajevo, in September 2013. She started working in Public Interest Advocacy Center – CPI Foundation in June 2013 as Project Manager on the SEE SEP project. She also contributed to the LCPD/IED report "Time to Phase Out Dirty Coal in South Eastern Europe" with the emphasis on health damage resulting from the use of coal.



## Tanja Jokić

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Tanja Jokić gained her Master of Science degree at the department of Electric Power Engineering at Faculty of Electrical Engineering in Sarajevo, Bosnia and Herzegovina. She has been working at the Public Interest Advocacy Center – CPI Foundation in Sarajevo since June 2013, employed as Project Manager on the SEE SEP project. She also contributed to the LCPD/IED report "Time to Phase Out Dirty Coal in South Eastern Europe".



## Sonja Zuber

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Sonja Zuber is the research and management coordinator in Macedonian think tank Analytica since 2010. She has relevant work experience in proposing policy solutions for laws and strategies, and in lobbying on national and international level. Sonja is trained on relevant policymaking, qualitative and quantitative research as well as energy modeling. In Analytica think tank, she has extensively worked on many projects at national and regional level funded by the Government of Macedonia, the European Commission and other domestic and foreign donors.

She has written and co-written more than 20 policy reports and briefs such as: "Winners and Losers – Who benefits from high level corruption in the South East Europe energy sector?", "Energy Poverty in Macedonia: Analysis of the Law on changing and amending the Law on energy adopted in May 2013", and many more. Sonja Zuber holds a Bachelor of Arts in Political Science from the University "Cyril and Methodius" Faculty of Law, Justinianus Primus, Skopje, Macedonia and a Master of Arts in European Studies from the Hochschule Bremen, Germany.



## Ana Stojilovska

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Ana Stojilovska has been working as a Research Fellow on the Energy and Infrastructure Program at Analytica Think Tank in Macedonia since October 2010. She holds a Master's Degree in European Studies obtained at the Europa-Kolleg Hamburg, University of Hamburg, Germany.

Her areas of research include energy efficiency, renewable energy, energy security, the heat market, co-generation, gasification, energy poverty, energy modeling for the buildings sector, cooperation between government and civil society, good governance in the energy sector... She has authored and co-authored over 30 papers and commentaries on energy topics published by Analytica, Konrad Adenauer Foundation, University American College Skopje, World Bank, and Macedonian magazine Political Thought.

She has worked on over 20 local and regional projects including research projects and events in the capacity of researcher, project assistant or project manager. Ana Stojilovska was also engaged in preparing comments for energy relevant documents such as European Bank for Reconstruction and Development's country strategy for Macedonia, Macedonian Energy law, Renewable Energy Action Plan for Macedonia, Work program of the Macedonian Government, etc.



## Sanja Orlandić

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Sanja Orlandić graduated in Biology on the Faculty of Mathematics and Natural Sciences of the University of Montenegro in Podgorica. She has been employed as the energy program coordinator of CSO Green Home – Zeleni dom since 2008. Her areas of work in the frame of energy program include energy efficiency, renewable energy sources (with focus on solar and wind energy), providing opinions for strategic documents prepared by the Government of Montenegro (such as the National Energy Strategy), providing opinions on strategic environmental impact assessments for large energy projects (interconnection cable between Pljevlja and Lastva Grbaljska, hydropower plants on Komarnica river), and researches about implementation of legislation in the field of energy in Montenegro.



## Anyla Beqa

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Anyla Beqa is currently working as Energy Model Developer at the Advocacy Training and Resource Center (ATRC) in Kosovo. She has a Bachelor's Degree of Science in Applied Arts and Science, majoring in Economics and Statistics and Public Policy. Anyla has been working within SEE SEP project since September 2013. She also contributed to the report about corruption "Winners and Losers: Who benefits from high level corruption in the South East Europe energy sector?". Her previous engagement in the field of energy includes her fellowship at the Transmission, System and Market Operator KOSTT in Kosovo.



## Lira Hakani

Lira Hakani has a Master's Degree in Biology from the Faculty of Natural Sciences, University of Tirana, Albania. She has been a Program Officer for Public Information and Participation with the Environmental center for Development, Education and Networking (EDEN) in Tirana since September 2011. Her areas of work include public information, energy, industry, monitoring IFI investments, environmental projects and law implementation.



## Zvezdan Kalmar

Zvezdan Kalmar studied at the Faculty of Philosophy, University of Belgrade, Serbia, and is engaged in the civil society movement of Serbia since 1997. He is working as the coordinator for Energy and Transport at CEKOR (Center for Ecology and Sustainable Development), and is also CEE Bankwatch's coordinator in Serbia since 2005. Zvezdan is a campaigner and activist and often represents Serbian environmental NGOs in international meetings and fora regarding energy, climate issues and transport, such as in NGO dialogue with European Commission, EBRD Annual meetings, Astana Ministerial Conference, Energy Community, etc.

He is working on legal and strategic issues such as LCPD, hydro, biomass, resettlement, state aid in energy, energy poverty, lignite pollution, climate and energy policies, climate adaptation as well as on monitoring of EU integration processes in Serbia and IPA programming. He also works with local communities that are endangered by large infrastructure projects on assisting them to realize and utilize their human and environmental rights.



### South East Europe Sustainable Energy Policy

With approximately 25 million potential new EU citizens in South East Europe, who are all energy consumers, energy is perhaps one of the most complex issues which is facing the region. It has interrelated and far reaching impacts on several areas, including society, the economy and the environment, particularly as South East Europe faces the imminent deregulation of the market in 2015 in a less than ideal governance environment. The South East Europe Sustainable Energy Policy (SEE SEP) programme is designed to tackle these challenges. This is a multi-country and multi-year programme which has 17 CSO partners from across the region (Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro and Serbia) and the EU. It is financially supported by the European Commission. The contribution of the SEE SEP project will be to empower CSOs and citizens to better influence policy and practice towards a fairer, cleaner and safer energy future in SEE.



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