WMO OMM
World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

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Our ref.: 03278-2022/S/ACS/ENE

15 February 2022

Annex.: 1 (available in English only)

Subject: Training Course on Weather and Climate Services for the Energy sector in Central Asia, Online, between 21 February and 4 March 2022

Action required: Encourage relevant staff to attend the Training Course on Weather and Climate Services for the Energy sector in Central Asia

Dear Sir/Madam,

I am pleased to inform you about the upcoming Training Course on Weather and Climate Services for the Energy sector in Central Asia that will be run as an online event over a two-week period, three days per week, between 21 February and 4 March 2022.

The training course is organized by the World Meteorological Organization (WMO) Study Group on Integrated Energy Services (SG-ENE) together with the Kazakh-German University in Almaty (DKU), The World Energy & Meteorology Council (WEMC), and the World Bank (WB). The course will include a mix of lectures, panel-type discussions, and practical exercise. For more information, please refer to the latest version of the programme attached herewith to this letter. The link to the workshop's webpage can be found here.

The energy sector needs a variety of meteorological services to support decision-making for both day-to-day operations and for longer-term strategic planning, as weather and climate variables affect energy demand and supply. Weather and climate services can be utilised to maximise efficiency, economic viability and public acceptance of both supply and demand-side management of energy systems. In light of the above, the aims of the course are to:

- Create awareness and knowledge about the design and application of weather and climate services for the energy sector in Central Asia.
- Build capacity on the application of weather and climate services for net-zero energy transitions in the Central Asian region, leveraging international climate finance.
- Showcase how climate data, such as that provided by Copernicus Climate Change Services, can be used to inform smart, clean energy transition.
- Foster a dialogue and partnerships between the hydrometeorological and energy communities in the region, to address major energy challenges in upcoming years.

To: Permanent Representatives of Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, Tajikistan, Afghanistan and Iran with WMO (limited distribution)

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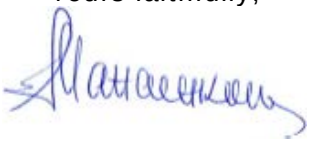
Participants of this training course include energy company practitioners, policymakers and services providers in the Central Asia region. I, therefore, invite you to share the information among relevant staff and encourage their participation at the training course. The registration form can be found here.

For any further information on the training course and the technical sessions, please contact Ms Roberta Boscolo (rboscolo@wmo.int) and Mr Hamid Bastani (hbastani@wmo.int).

I thank you for your continuous support to the activities of WMO.

Yours faithfully,



Dr Elena Manaenkova
for the Secretary-General

Ref.: 0327/2022-L1 SACS

Weather & climate services for the energy sector in Central Asia: Training course for practitioners and policymakers

Background

Central Asia is endowed with abundant and diverse energy resources[1]. However, countries in the region largely rely on carbon-intensive energy sources, with an untapped renewable energy potential[2]. Kazakhstan, for example, has embarked on an energy transition, shifting away from coal to more sustainable, low-carbon options[3]. However, the share of renewable energy generated in the country in 2020 was below 2%[4], with policy targets for renewables to set to increase to 10% in 2030 and 50% by 2050. Most countries in the region have likewise mandated renewable energy goals, aiming to shift away from reliance on their abundant coal and natural gas supplies for power generation. However, significant infrastructure, investment, planning, operations, policies and governance efforts are needed to achieve these targets[5].

The energy sector needs a variety of meteorological services to support decision-making for both day-to-day operations and for longer-term strategic planning[6], as weather and climate variables affect energy demand and supply. Consideration and analysis of these variables is of particular importance for renewable energy sources. Thus, understanding the impacts of weather and climate on energy systems is key to ensuring effective and efficient uptake of renewable, clean energy sources. Weather and climate services can be utilised to maximise efficiency, economic viability and public acceptance of both supply and demand-side management of energy systems[7].

Weather and climate services can support the energy sector in[8]:

- Building resilience to extreme weather events and climate variability in planning, operations and infrastructure development.
- Anticipating and managing changes in demand based on weather and climate variables, supporting robust energy management.
- Supporting uptake of renewable energy, including wind, solar and hydropower. For example, data on wind speed and solar radiation is necessary for the most effective and efficient uptake of renewables
- Ensuring effective, efficient and safe uptake of other technologies to achieve carbon neutrality.

Objectives

In light of the above, the aims of the course are to:

- Create awareness and enhance knowledge about the design and application of weather and climate services for the energy sector in Central Asia.
- Build capacity on the application of weather and climate services for net-zero energy transitions in the Central Asian region, leveraging international climate finance.

- Showcase how climate data, such as that provided by WEMC's Teal Tool, can be used to inform smart, clean energy transition, in the context of policy and industry.
- Foster a dialogue and partnerships between the hydrometeorological and energy communities in the region, to address major energy challenges in upcoming years.

The Audience

Policymakers, energy company practitioners, meteorological organisation, NGOs and academics and other interested stakeholders from the Central Asian region.

Course structure

The course will comprise a mix of lectures, panel-type discussions, and practical exercises. The underlying thread, and a goal, of the course is the preparation of basic project proposals for a weather and/or climate service. This will be a team activity to encourage sharing of ideas, and a healthy and friendly competition amongst teams. The training course, *currently planned as an online event*, will take part over 3 weeks, twice-a-week, 3 and a half-hour training (for a total of 20+ hours; exact timing to be refined).

Course programme

A draft programme, including tentative suggested lecturers, is presented below. This is based on two similar training organised by WMO, WEMC and other partners, and delivered in Norwich in 2016[9], and Shanghai in 2018[10]. It also incorporates learnings from the SECLI FIRM summer school, delivered in September-October 2021[11]

Summary of Sessions

Session 1 (21.02.22): Why weather and climate services matter for energy management

Session 2 (23.02.22): What is needed for delivering weather and climate services

Session 3 (25.02.22): How to design a climate service

Session 4 (28.02.22): Applying weather and climate services for the energy sector

Session 5 (02.03.22): Applying weather and climate services for the energy sector with connections to water and agriculture/food (the 'nexus')

Session 6 (04.03.22): Concluding thoughts and participants presentations

Times in UTC; Almaty (the 'venue' of the virtual event) is UTC+6

All sessions running 9:00 – 12:30 UTC / 15:00 – 18:30 Almaty

WEEK 1:

Session 1 (21.2.22): Why weather and climate services matter for energy management

In this session, we will explore why weather and climate services are needed in the energy sector, how they can be applied in the region and possible challenges to their uptake.

Time	Title	Speaker	Objective
9:00-9:30 UTC	Introductions & Round-the-table	Alberto Troccoli (WEMC), Dr Barbara Janusz-Pawletta (DKU), Daniel Kull (WB)	Get acquainted with participants, present course outline and objectives
9:30-10:30 UTC	Weather & climate services for the energy sector	Alberto Troccoli (WEMC), Laurent Dubus (WEMC)	Explain what weather and climate services are. Demonstrate how these are valuable for the energy sector
10:30-11:00 UTC	Break & networking		
11:00-11:30 UTC	The energy sector in Central Asia: current status and emerging trends	Iva Brkic (UNECE) & Sergey Tulinov (ESCAP)	
11:30-12:30 UTC	Panel: Weather and climate services for supporting energy transitions in Central Asia: local barriers and opportunities	Alexey Kobzev, Saltanat Zhakenova (DKU), Jane Ebinger (TBC) (WB), Daniel Besley (TBC) (CCDR), Asset Nauryzbayev (TBC)	Outline opportunities and challenges to the uptake of weather and climate services to support energy transitions in the region

Session 2 (23.02.22): What is needed for delivering weather and climate services

Understand the steps for building a weather and climate service through the weather and climate service value chain. We will then explore the perspective of regional National Hydrometeorological Institutes on the uptake of weather and climate services, before introducing the practical: build your own weather and climate service.

Time	Title	Speaker	Objective
9:00-10:00 UTC	Good practice in delivering weather and climate services development for the energy sector	Roberta Boscolo (WMO), Chiara Cagnazzo (C3S)	Explore best practice in weather and climate service development for the energy sector

10:00-11:00 UTC	Panel: National weather & climate services for the energy sector– the perspective of the National Hydrometeorological services in the region	Representatives from NMHSs in the region, Kaz Hydromet (TBC)	Understand the state of national weather and climate services provided to the energy sector and identify national capacities and needs
11:00-11:30 UTC	Break & networking		
11:30-12:30 UTC	Introducing practical: planning an energy weather/climate service for your country/company	Alberto Troccoli (WEMC)	Introduce the process of creating a mini-proposal for a weather/climate service

Session 3 (25.02.22): How to design a climate service

In this session we will explore the design process of weather and climate services, from the application of collaborative approaches, to using weather forecasting for energy applications.

Time	Title	Speaker	Objective
9:00-10:00 UTC	Collaborative approaches to weather and climate services	Clare Goodess (UEA)	Explore co-design principles, from understanding users' needs, co-production and co-delivery, also touching on evaluation
10:00-11:00 UTC	Group work - build your own mini climate service/ proposal		
11:00-11:30 UTC	Break & networking		
11:30-12:30 UTC	Weather and climate forecasting for energy applications in the region	Sue Ellen Haupt (NCAR), David Brayshaw (U of Reading)	Understand the science behind and application of weather and climate forecasting for the energy industry

WEEK 2

Session 4 (28.02.22): Applying weather and climate services for the energy sector

In this session we will understand the factors affecting energy users' decisions and actions when using weather and climate services. We will then hear from energy industry stakeholders on their experience with weather and climate services.

Time	Title	Speaker	Objective
9:00-10:00 UTC	Presentation: Sources of weather and climate data for the energy sector: Copernicus C3S, the Global Solar and Wind Atlas, etc	Matteo DeFelice (JRC) Jake Badger (DTU)	Explore sources of data for the development of weather and climate services
10:00-11:00 UTC	Case studies: applying climate services in the energy industry	Dana Yermolyonok (GIZ) Kazhydromet (TBC), KEGOC (TBC)	Panel showcasing case studies using weather and climate services in the energy sector
11:00-11:30 UTC	Break & networking		
11:30-12:30 UTC	Group work – build your own mini climate service/ proposal		

Session 5 (02.03.22): Applying weather and climate services for the energy and related sectors

In this session, we will explore different data sources for the development of weather and climate services. We will then hear how these services can be turned into business opportunities.

Time	Title	Speaker	Objective
9:00-10:00 UTC	Insurance and hedging for energy and agriculture	Lukas Sundermann (Swiss Re)	Learn how insurance is used to hedge hydropower production and agricultural products in the region
10:00-11:00 UTC	Panel: Weather and climate services for risk management and net-zero infrastructure development	Ministry of Energy of the Republic of Kazakhstan (TBC), Ministry of Ecology, Geology and Natural resources of Kazakhstan (TBC)	Discuss what is required to support weather and climate services for the net-zero transition and low-carbon investment.
11:00-11:30 UTC	Break & networking		
11:30-12:30 UTC	Group work – build your own mini climate service/ proposal		

Session 6 (04.03.22): Concluding thoughts and participants presentations

In the first part of this session, we will explore with course participants capacity needs and knowledge gaps for uptake of weather and climate services in the region. Participants will then showcase their projects, before concluding comments and farewells.

Time	Title	Speakers	Objective
9:00-10:00 UTC	Building regional and cross-sectoral capacity on weather and climate services – what is needed?	Andreas Schaffhauser (ZAMG), UNECE Environment Division (TBC)	Explore what individual, organisational and institutional capacities are needed to enhance collaboration and uptake of weather and climate services in the region
10:00-11:00 UTC	Elevator pitch of projects	Group representatives	Demonstrate the group work performed during the training event
11:00-11:30 UTC	Break & networking		
11:30-12:30 UTC	Closing and farewell	Alberto Troccoli (WEMC), Dr Barbara Janusz-Pawletta (DKU), Alexey Kobzev (DKU)	

References

[1] Mehta, K.; Ehrenwirth, M.; Trinkl, C.; Zörner, W.; Greenough, R. The Energy Situation in Central Asia: A Comprehensive Energy Review Focusing on Rural Areas. Energies 2021, 14, 2805. https://doi.org/10.3390/en14102805

[2] IRENA, 2018, Central Asia regional initiative, https://www.irena.org/asiapacific/central-asia-regional-initiative

[3] Department of Commerce USA, 2021, Energy Sources Guide, Kazakhstan – Renewable Energy, https://www.trade.gov/energy-resource-guide-kazakhstan-renewable-energy

[4] Renewable Market Watch, 2020, Kazakhstan continues its ambitious plans for renewable power capacity increase and pursues clean energy leadership position among CIS States, https://renewablemarketwatch.com/news-analysis/327-kazakhstan-continues-its-ambitious-plans-for-renewable-power-capacity-increase-and-pursues-clean-energy-leadership-position-among-the-cis-states

[5] See for example: IWPR (2020) Renewable energy sources in Central Asia: what should be on the agenda now, https://cabar.asia/wp-content/uploads/2020/08/Policy-Brief_energy_eng.pdf; Cohen, A. 2021, Central Asia to green its economies, Forbes, 28.06.2021, https://www.forbes.com/sites/arielcohen/2021/06/28/central-asia-to-green-its-economies/

[6] WMO, 2011, Meteorology and the Energy Sector - a WMO Perspective, Bulletin No: Vol 60 (2) - 2011

[7] WMO, 2017, GFCS Energy Exemplar to the user interface platform of the global framework for climate services, link

[8] See for example Kull, D., Novikov, V., Hughes, G. (eds.) 2019, Weather climate and water in Central Asia, World Bank, https://phase1-gfdrr-drupal8.pantheonsite.io/sites/default/files/publication/Hydromet-Atlas-ENG-27Jan2020-spread-WEB.pdf

[9] WEMC, 2016, https://www.wemcouncil.org/wp/2016-summer-course-on-climate-and-energy/

[10] WEMC, 2018, https://www.wemcouncil.org/wp/wmo-wemc-gfcs-bcc-training-course-climate-energy-shanghai-china/

[11] SECLI-FIRM Project, 2021, https://www.secli-firm.eu/secli-firm-summer-school-2021/

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