

**CFAN 3532/5532 “Germany: Leading the Renewables Revolution”--
an embedded spring 2025 course with winter-term study abroad experience in Germany**

Intensive study abroad seminar to experience Germany’s globally inspiring energy transition

Instructors: Sabine Engel, PhD, director for international partnerships, Institute on the Environment, U of M; PI on energy policy grants with German government (2011-2013; 2014-2015; 2016; 2017; 2018, 2019, 2022, 2023); PI on Climate-Smart Municipalities project with German government and 12 cities in MN and Germany (2016-2022). Native German speaker. Former director of the U’s DAAD Center for German & European Studies (Dec. 2006-May 2014); program organizer and U of M leader for 22 delegations to Germany of MN legislators, government officers, and representatives from the private and nonprofit sectors. Access to a very strong and deep network of partners in Germany.

Beth Mercer-Taylor, J.D., sustainability education co-director, Institute on the Environment, U of M

Troy Goodnough, sustainability director, University of Minnesota Morris

Credits: 3 credits, **embedded course**

Where: North Rhine-Westphalia (NRW), Germany. Visits to Duesseldorf, Saerbeck, Muenster.

German partners:

Program partners-- Award-winning climate-smart City of Saerbeck; FH Muenster University of Applied Sciences (senior faculty member and international office); NRW State Ministry for Environment, Nature Protection and Transportation (MUNV); City of Muenster; NRW Ministry of Economic Affairs, Industry, Climate Action and Energy of the State of North Rhine-Westphalia (MWIKE).

Background:

A special relationship between Minnesota and NRW allows multi-stakeholder collaboration on renewable energy.

For the past twelve years, the University of Minnesota has organized a high-level policy exchange with Germany’s federal government on renewable energy policy and Germany’s ambitious energy transition (net-zero by 2045). To date, more than forty bipartisan members of the MN state legislature and MN commissioners as well as representatives for MN utilities, NGOs and U of M leaders have traveled to Germany as part of the program. The policy exchange has allowed MN leaders a firsthand view of the massive restructuring effort of a major world economy. Minnesota’s solar energy legislation of 2013 is among the lasting and most visible direct outcomes. In December 2013, Minnesota signed an agreement with the NRW Ministry for Climate Protection, Environment, Agriculture, Nature Conservation and Consumer Protection (MKULNV) to cooperate on renewable energy and energy efficiency. In October 2015 and at the suggestion of MKULNV, then-Minnesota Governor Dayton signed the Under 2 MOU, recommitting the state to limiting the impact of climate change and collaborating on actions to promote adaptation and resilience. In 2018, Minnesota’s Department of Commerce renewed its agreement with NRW. In 2020, Minnesota’s Pollution Control Agency signed a cooperation agreement with the NRW Ministry for Environment, Agriculture, Nature Protection and Consumer Protection (MULNV) to work

together on climate adaptation and sustainability issues. Minnesota’s 2018 state election results added additional momentum to the state’s special relationship with Germany as a number of participants in the Germany policy exchanges moved into state government leadership positions. In July 2019, Lt. Governor Peggy Flanagan headed a 22-member delegation of MN energy policy leaders to NRW. In December 2019, the Walz-Flanagan Administration issued an Executive Order that established the Governor’s Subcabinet on Climate Change, which meets monthly. Its purpose is to ensure climate change is being considered in all department-level decisions. In May 2021, the MN legislature passed transformative energy efficiency bills that were built on the years of exchanges with Germany. In December 2021, Germans elected a new government committed to accelerating the energy and climate transformation of their county. Key ministries are held by members of the Green Party. In May 2022, the people of the state of North Rhine-Westphalia elected a new government that similarly embraces renewable energy and climate action. And in the USA, President Biden in August 2022 signed the Inflation Reduction Act, the country’s most transformative energy and climate bill in fifty years.

MN and NRW states have built organizational structures and instruments to support and accelerate the adoption of sustainable energy and climate strategies. Both states embrace a culture of collaboration that allows multiple stakeholders to work together for maximum individual benefit. Both states have large geographic footprints and extensive rural areas.

Student Contact Time

Workload expectations: 3 semester credits. For undergraduate courses, one credit is defined as equivalent to an average of three hours of learning effort per week (over a full semester) necessary for an average student to achieve an average grade in the course. For example, a student taking a three credit course that meets for three hours a week should expect to spend an additional six hours a week on coursework outside of the classroom.

CFAN 3532/ CFAN 5532 is considered a Spring Semester Embedded Course. There will be 18.5 hours of classroom instructional time in Minnesota. Before travel, students attend one full-day 6 hour in-person classroom-based meeting, on Nov.9 and one full day 7 hour zoom meeting on Dec 20. After travel, there is one 3 hour meeting to present final student work, on Zoom, on Feb 7, and one 3 hour in person session to celebrate the program, on March 31. There is a 12-day study abroad portion of the program that occurs in Germany from Jan 7-19, 2025. The Germany in-country contact time will include 10 days of substantive content of at least 8 hours per day, divided into approximately 1) 40 hours of classroom instructional time in the form of briefings, lectures, student presentations and debriefings and 2) 40 hours of field instructional time in energy facility excursions, cultural visits, museum tours and city walks.

Total academic course time: 139 hours, including

Classroom time

6	Nov.9 preparatory session
7	Dec. 20 preparatory session
80	Jan. 7-Jan. 19 Germany immersive program (8 hours per day for 10 days, excludes 2 travel days)
3	Feb. 7 student presentation session
3	Mar. 31 wrap up and celebration session

99	TOTAL CLASSROOM WORK

Out-of-classroom work

5	journaling and preparing for next day's session (half hour per day)
6	pre-travel energy work (mini research project)
3	pre-travel culture & personal reflection (preparing biography and slides)
3	preparing for all-class presentation on zoom (finalizing slides, practicing)
3	preparing for role participation in course celebration (presenter, table host, moderator)
20	academic research, interviews, paper-writing and revisions (independent research paper)

40	TOTAL INDEPENDENT WORK

Note that required dinners, travel time to and within Germany with the instructors as well as culturally important time in Germany not directly part of the course content is not included in the hours above.

Expanding the dialogue to U of M students as the next generation of leaders

CFAN 3532/ CFAN 5532 is part of an ongoing high-level energy and sustainability exchange with Germany. Participants in the student delegation are citizen ambassadors for the USA and Minnesota and represent the next generation of Midwest leaders. They will understand the systems approach underlying Germany's energy transition and experience the energy transition as a project that ties together social, technical, and political issues and requires collaborative leadership across those divisions.

SYLLABUS

**CFAN 3532/5532 "Germany: Leading the Renewables Revolution"--
An embedded fall course and winter-term study abroad experience in Germany**

Instructors:

Sabine Engel, PhD, director for international partnerships, Institute on the Environment, U of M
Beth Mercer-Taylor, J.D., sustainability education co-director, Institute on the Environment, U of M
Troy Goodnough, sustainability director, UMM.

Course description: Germany and the Scandinavian countries have a long track record as sustainability leaders—from creating comprehensive recycling programs to embracing energy efficiency to replacing fossil with renewable fuels to building large public transportation systems. There is majority support in the public for "green" technologies and for finding effective ways to reduce the climate impact of a large industrial society. In summer 2011 and reacting to massive political pressure from the citizenry to immediately exit nuclear power, Germany's conservative government under Chancellor Angela Merkel announced the energy transition. The country would exit nuclear power by 2022. It would dramatically increase the percentage of renewables in the electricity mix. It would establish milestones to successively reduce greenhouse gas emissions by 80% compared to 1990 levels. In 2021, Germany's Supreme Court ordered the Government to dramatically update its energy and climate measures. Federal elections put a new coalition government in charge that enshrines Green party climate, energy, and sustainability objectives. Several state elections further bolstered Green party objectives. The

Russian assault on Ukraine has created an energy supply crisis that threatens Germany's economy and dramatically accelerates decarbonization efforts across all economic sectors. Germany, in effect, is a live laboratory for a broad technological and social transformation that requires new kinds of collaboration between established actors.

This study abroad course introduces students to the political, social, and technological settings within which the transformation to a market-based green economy takes place. Students will meet with the full range of stakeholders and agents—in politics, government, the private sector, research and education, and civil society. They will also visit sites that model Germany's integrated approach to the energy transition. The primary site is the award-winning small city of Saerbeck in rural North Rhine-Westphalia (NRW). Saerbeck's city leadership embraces broad-scale collaboration, partners with regional and national applied research institutions on new advances in renewable energy storage, combined heat and power, solar and wind power, and the electrification of transportation. In October 2015, Saerbeck began a technical partnership with the City of Morris, Minnesota, and UMM to cooperate on measures that reduce the communities' carbon footprints and generate economic benefits. This study abroad course takes advantage of two international agreements between the state of Minnesota and the state of North Rhine-Westphalia to work together on best practices in renewable energy, energy efficiency, sustainability and climate adaptation. Students will have a unique opportunity to experience Germany's accelerating renewable energy transition. To foster bi-national learning, they will also generate reports to the German partners on the status of Minnesota's energy transition.

COURSEWORK AND ASSIGNMENTS

Class Participation (Minnesota workshops; Germany seminar and site visits) - 15 points: Students earn points for constructive participation. Accommodations for illness or emergencies will be made.

Daily reflection journal while abroad – 10 points: A point per day of journal reflection. Students should reflect on their day, and then undertake writing, sketching and/or annotating their photography about the substantive topics read or discussed, cultural experiences and intercultural observations of that day. Students who write their daily reflection journals in German are eligible to have this course be counted for German minor/ major credit. Any student desiring to use this option will need to get in touch with the GSD director of undergraduate studies, Dr. Bigelow.

2 page introductory paper, 2 page mini-research paper, accompanying 5 slide presentation – 20 points: In a 2 page introductory paper, students write a short bio about their experience and interest in energy related to Minnesota's or Germany's energy system, describe their own political representatives and detail clean energy projects in their home community. In a 2 page mini-research paper, students present an idea to accelerate the energy transition that would be possible in Minnesota. A 5 slide presentation will illustrate the content of these papers. These materials will be provided to our German colleagues.

Final paper (6 pages) and Reflection Essay (2 pages) – 40 points: The final paper will be shaped by group work done in Germany, which informs Minnesota's energy transition in Morris as well as many other "climate smart" municipalities. It will be on an individual research topic that must apply to the energy transition in both Minnesota and Germany and be approved by the instructor. Credible research sources must inform the paper, which can also draw upon journal entries, meetings in Germany and materials gathered in Germany. The Reflection Essay can draw on memories of cultural experiences,

field trips or meetings, tap journal entries, incorporate notes or aspects of research done on the final paper, etc. Both to be completed after Germany experience; due date: February 28.

Research presentation on final project – 10 points: Students will present their research to faculty, staff, and other students at a special event that involves the U’s IonE, CERTS, and the campus sustainability coordinators. Feb. 7, 2:00-5:00 PM, virtual event.

On-campus public outreach event “Renewable Energy and Climate Insights for Minnesota” - 5 points
Students will share and discuss their insights and visions for Minnesota with family and political leaders. March 31, 2025, 6:00-9:00 PM, in person at McNamara Alumni Center, Twin-Cities campus.

Learning Outcomes:

By the end of the course students should substantively understand:

- The basic concept of Germany’s energy transition as a comprehensive societal transformation that is only partly about technology
- The various technologies that need to be combined across sectors to achieve a sustainable, secure, and affordable energy system
- The need to invest in multiple and parallel new technologies
- The differences between the energy system in the USA and Germany
- The levers for action in a democratic system and the crucial role of citizens
- The history and status of Minnesota’s efforts to advance renewable energy and address climate change

Additionally, students will learn habits of mind that are crucial to grappling with complex societal challenges. They will:

- Develop an understanding of competing social demands and interests and ask questions that emphasize social justice issues
- See and evaluate projects that connect policy and practice
- Develop a better understanding of why and how cultural differences enrich solutions to complex problems
- Practice effective communication skills in writing and speaking assignments
- Locate and critically evaluate sources of information
- Reflect on their own role in solving the 21st-century climate challenge

Graduate Offering - CFAN 5532

The graduate students enrolled in this course will be held to graduate-level expectation. Graduate students will participate in an enhanced role in all workshops and in-country activities, which means preparing for and asking questions each day. They may be asked to prepare short special topic briefings for the German ministry partners. They will also need to complete all academic work with the focus, thoroughness and accuracy appropriate to the graduate level, meaning their work indicates what is labeled a “capstone,” or 4 on a 1-4 scale, level of achievement, as described in the Association of American Colleges and Universities (AACU) Critical Thinking VALUE rubric:
<https://www.aacu.org/initiatives/value-initiative/assignment-design-and-diagnostic-tool>

Graduate students will be expected to complete a well-researched and professionally presented final paper and to write, in their final reflection essay on the course experience, about their own professional development. This essay will afford graduate students a chance to offer their insights and suggestions with regard to the substantive content and pedagogy of the course and to outline steps for their own professional development in the area of energy transition work and research.

Graduate students will be expected to **take initiative in their own learning**, specifically by integrating their own discipline or area of study into the course content. They will additionally need to:

- Write a **polished two-page introductory briefing paper** for our German partners to learn about the focus of their graduate study, whether in terms of research, method or practical application, as it relates to the German-Minnesota energy policy exchange;
- Create and present, for one or more of our professional meetings, a **5-slide powerpoint** on the connection between their own research and the German-Minnesota energy policy exchange;
- **Prepare well-researched and engaging questions each day**, tapping their own research and interests as applicable to the content of our professional meetings. Required 10 of the 12 days in Germany. Responses to the questions raised should be noted in daily journal entries.

Graduate Grades: Students may earn a possible total of 100 points. Graduate level work is noted, but the structure and weighting of assignments follows the same pattern, but at a higher level of work and expectation, as for undergraduates, as indicated above.

Environmental Theme

As the 21st century begins, there is probably no set of issues on which academic research, educational instruction, the demands of public policy, and the requirements of informed citizenship are more powerfully joined than those relating to the environment. Over the last half century, even with a doubling of the human population, human health and per capita income have improved dramatically in many parts of the world as supplies of food and energy increased in combination with advances in technology. This success has required a vast increase in the intensity of human use of the environment with inadvertent environmental impacts such as global climate change, air and water quality degradation, loss of biological diversity, and invasions by exotic species. During the coming 50 years, the human population is projected to increase by 40%, leading to further stresses on the environment. Societal policies and practices must change to minimize environmental impacts. Now more than ever all citizens need to be engaged with the science and policy surrounding the environment to minimize unintended environmental impacts from the local to global scale.

Environmental issues are complex. Finding solutions to these environmental issues will have students vigorously debating the myriad of solutions; weighing the costs with the benefits and tradeoffs among alternative policies and practices; exploring the roles of science and technology; learning to become involved, informed, and constructive citizens after graduation. Issues such as sustainability and the ethics of intergenerational equity must be weighed against meeting current needs and wants. The pursuit of solutions to environmental issues is a highly synthetic and interdisciplinary endeavor. Therefore, courses that fulfill this Theme need to connect students, in explicit ways, to solving problems. A broad array of disciplines, from physical and biological sciences, to the social sciences and humanities need to be integrated into the proposed solutions, which must be based on science, but which will be implemented and sustained only if they are consistent with the ethics and values of society.

The **environment theme** asks that courses must meet these criteria by:

Raising environmental issues of major significance:

CFAN 3532 and CFAN 5532 addresses the environmental benefits of societal-level shifts away from fossil fuels in energy production, distribution and usage, both in Minnesota and in Germany. The course presents the opportunities and challenges of a clean energy transition, and compares the context of Minnesota and Germany, including scientific, technological, economic, public policy and cultural perspectives. Carbon and pollution reduction are key benefits of clean energy, but shifts away from conventional energy causes economic dislocation for some workers and industries.

Giving explicit attention to interrelationships between the natural environment and human society:

CFAN 3532/ 5532 presents to students the enormous impact of human energy systems on the natural environment, and on human society as well, in both Minnesota and in Germany. Students will be expected to understand and present the policy and cultural frameworks through which Minnesotans care for and use the natural environment. Students will be seen as members of a Minnesota energy delegation by the German professionals that they interact with. German and European understanding of land use, community and natural resources will be compared to that of Minnesota and the U.S.

Underlying scientific principles behind environmental issues will be examined:

CFAN 3532 and CFAN 5532 students will gain an understanding of the scientific and engineering concepts of carbon reduction and energy transition at scale, including the necessity of deploying multiple renewable energy technologies (wind, solar, small hydro, geothermal and others) to achieve a stable clean energy system, the different needs for baseload and for peaking power, the costs and opportunities of energy storage, the benefits of smart grids, the particular challenges of biofuels, the water and energy nexus and much more. Minnesota and German technical experts in addressing climate change, crafting environmental policy and operating complex energy systems will present to students and address their questions.

Students explore the limitations of technologies and the constraints of science on the public policy issues being considered:

One of the purposes of visiting Germany is to explore transition to a clean energy economy in a highly developed country with a strong environmental ethic and commitment to clean energy across multiple party lines, that nevertheless faces a variety of challenges in scaling up solar, wind, biofuel and other clean energy technologies. CFAN 3532 and CFAN 5532 students will be asked in their daily writing to reflect on the interaction of technological, economic, and cultural aspects of the energy and environmental issues they encounter.

Students learn how to identify and evaluate credible information concerning the environment:

CFAN 3532 and CFAN 5532 students will collect information about the Minnesota and German energy transition from assigned readings, from Minnesota and German experts and from their own research. They will be asked to document, assess, discuss, receive feedback on and make presentations about selected energy topics, both individually and in a group format.

Students demonstrate an understanding that solutions to environmental problems will only be sustained if they are consistent with the ethics and values of society:

In preparing to serve as members of a Minnesota energy delegation to Germany, CFAN 3532/5532 students will be exposed to and contemplate German care for natural resources, relationships to land,

political systems, culture, ethics and social values, and how these influence energy and environmental policy. Students will in turn come to understand more about their own culture, ethics, and belief system, and how these influence their view of energy systems and the environment.

Global Perspectives Liberal Education Theme:

Undergraduates must develop the competence to function effectively and ethically in a complex, rapidly changing world that is increasingly interdependent yet fraught with conflicts and disparities. The Global Perspectives Theme assures that graduates from the University have at least one significant exposure to the world beyond U.S. borders, and the opportunity to consider the implications of this knowledge for the international community and their own lives.

In the case of this course, students will experience concentrated study of a particular country, culture and region - Germany- through in-depth focus on the matter of the German energy transition, as it is situated in a European and a comparative international context, and as it compares to the energy transition in Minnesota and in the United States. Through the lens of the energy system in Germany, students will cultivate a broader and more thoughtful perspective on the technological, policy and cultural aspects of providing power for human needs. Given that energy systems in a highly developed European country like Germany differ from the U.S., in that they involve multilateral financial, business and trading relationships, as well as complex international policy frameworks, students will learn first-hand how geography, politics, history, economics intersect in shaping as fundamental an aspect of modern society as energy. In addition to a deep exposure to energy systems in an interdisciplinary context, students will be exposed to German culture through class excursions and discussions on current issues affecting the cities we will visit, including immigration, economic development, housing, transportation, city planning, architecture, contemporary art, food traditions and fashion.

The **Global Perspectives Themes** entails that the following criteria are met:

The course, and most or all of the material covered in the course, focuses on the world beyond the United States:

CFAN 3532 and CFAN 5532 focuses on energy transition from a distinctly German perspective and experience - in which clean energy technologies are already applied at scale and are well understood by the populace - and also considers how Germany's learning about clean energy is already being applied in other countries, regions and even globally.

The course either (1) focuses in depth upon a particular country, culture, or region or some aspect thereof; (2) addresses a particular issue, problem, or phenomenon with respect to two or more countries, cultures, or regions; or (3) examines global affairs through a comparative framework.

CFAN 3532 and CFAN 5532 emphasize the historical, cultural and economic reasons why Germany, in particular, became a global leader in clean energy adoption and innovation. The course also addresses, at a global scale, the issue of the renewable energy transition now underway throughout the world, particularly in wealthier developed countries in which decoupling energy/ carbon usage and economic growth offers a solution to climate change and a path towards technology and policy innovation. Students discuss and reflect on the implications of issues raised by the course material for the international community, the United States, and/or for their own lives. The intent of CFAN 3532 and CFAN 5532 is for students to become members of an on-going international exchange between Minnesota and Germany, in which Minnesota professionals and students who have traveled to Germany are all encouraged to reflect on what they learned, how the experience changed their views, to build

community with one another around their experiences, and most importantly, to find ways to work together to bring to Minnesota the best new energy-related ideas, projects and opportunities.

Grades and Incompletes

In accordance with the University of Minnesota Uniform Grading Policy, we will grade your performance in this course based on the following scale:

- A: Achievement that is outstanding relative to the level necessary to meet course requirements.
- B: Achievement that is significantly above the level necessary to meet course requirements.
- C: Achievement that meets the course requirements in every respect.
- D: Achievement that is worthy of credit, even though it fails to meet fully the course requirements.
- F: Represents failure and signifies that the work was either: 1) completed, but at a level not worthy of credit, or 2) not completed and there was no agreement between the student and instructors that the student would be awarded an “incomplete”.

Incompletes will only be given under extraordinary circumstances late in the semester that prevent normal completion of the course requirements. If such extraordinary circumstances arise, contact the instructors as soon as possible to review the situation.

Scholastic Dishonesty

Scholastic dishonesty is any act by a student that misrepresents the student’s own academic work or that compromises the academic work of another. Examples include plagiarizing, cheating on assignments or examinations, and engaging in unauthorized collaboration on academic work. Students who engage in dishonest conduct will be referred to academic affairs.

Students With Disabilities

Any student with a documented disability (physical, learning, systemic, vision, hearing etc.) who need to arrange special accommodations should contact the instructors and the Office of Disability Services (160 McNamara Alumni Center, 612-626-1333 TTY) as soon as possible.

Sexual Harassment

Sexual harassment by or toward a member of the University community is prohibited by Board of Regents policy. Complaints about sexual harassment should be reported to the University's Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall.

Classroom Conduct

All students at the University have the right to a civil, productive, and stimulating learning environment. In turn, instructors have a responsibility to nurture and maintain such an environment. Lively, even heated, discussion is not disruptive behavior. Both instructors and students have a fundamental obligation to respect the rights of each other and an equally fundamental obligation to respect the instructional setting as a place for civil, courteous behavior. Students who disrupt the educational process because of discourteous, threatening, harassing, or other aggressive behavior will be removed from class.

Course schedule

Session #1, Saturday, Nov. 9, 10:00-4:30

Orientation and Introduction to Energy Issues—politics, economics, regulatory framework, best practice examples

A day with seminar segments and get-to-know each other activities. In-person at UMN-TC.

- 10:00-10:30 am – Welcome; Introductions of instructors, overview of program, substantive and intercultural development
- 10:30-12:00 noon – Minnesota’s Energy Transition
[Minnesota’s track record as a national leader for renewable energy legislation and aspirations for future; Minnesota’s Renewable Energy Standard; MN Next Generation Energy Act; MN Solar Energy legislation; GHG emissions in electricity, buildings, transportation, industry, and ag sectors]
Guest speaker: Mari Odjeda, Energy Policy Advisor, Division of Energy Resources, MN Department of Commerce
- 12:00-12:30 – German eating/meal etiquette demonstration and activity
- 12:30 -1:00 pm – lunch with Getting to Know Each Other element
- 1:00 -2:15 pm - The Energy Transition: A Business Perspective
Guest speaker: Betsy Engelking, policy advisor, National Grid Renewables
- 2:30- 3:30 pm – Energy Efficiency: How to Reduce the Carbon Footprint of Buildings and Why it Really Matters
Guest speaker: Katie Jones, senior manager of community energy policy, Center for Energy and Environment
- 3:30-3:40 – break
- 3:45- 4:30 pm – course logistics, debrief, reflect, discuss readings and assignments, questions

Session #2, Friday, Dec. 20, 10:00-5:00, virtual meeting

Energy Transition Histories, Contexts, Players and Germany Travel Logistics

We will unpack the groundbreaking Inflation Reduction Act (President Biden's 2022 US climate bill) and similar legislation in Germany. We will learn about how political parties and coalition governments are shaping Germany’s energy and climate pathway. We will also understand the crucial role of states in moving forward faster on clean energy. You will learn why Minnesota matters more than you may think. Finally, we will share travel logistics.

Required reading:

“Germany’s Energiewende in 416 words”: <https://www.cleanenergywire.org/germanys-energiewende-brief> and

<https://www.cleanenergywire.org/news/germanys-energy-transition-track-mckinsey>

March 2023: [Transition State of Play—Germany is Emerging from the Energy Crisis](https://www.cleanenergywire.org/factsheets/germanys-greenhouse-gas-emissions-and-climate-targets)

<https://www.cleanenergywire.org/factsheets/germanys-greenhouse-gas-emissions-and-climate-targets>

“Climate Smart: Cities Working Together” (2018, Twin Cities Public Television)

Nov. 2021

<https://www.cleanenergywire.org/factsheets/future-german-governments-key-climate-and-energy-plans-2021-coalition-treaty>

USA context

<https://www.ncsl.org/state-legislatures-news/details/new-support-for-energy-projects-and-transition-to-low-carbon-power>

<https://www.energy.gov/articles/doe-fact-sheet-bipartisan-infrastructure-deal-will-deliver-american-workers-families-and-0>

- 10:00-10:20 Welcome, introductions, short breakout segment

- **Energy Policy, Technology, and Projects in Minnesota and Germany —**
- 10:20-10:55 “Unpacking the Groundbreaking Inflation Reduction Act”
speaker: tbc
- 11:05-11:35 “Germany’s Energy Transition: Strong Start, Agonizing Slowdown, and Dramatic Acceleration”
speaker: Sabine Engel
- 11:40-12:20 pm Germany’s political system, in comparison to the US and in terms of dynamic developments at federal and provincial levels, status of various parties with regard to energy transition; coalition contract agreements & climate change

- 12:30-1:00 lunch break

- 1:05-1:30 model project discussion & presentations [students present]
- 1:30-1:45 plenary: feedback / reflection

- 1:50-2:35 bipartisan energy perspectives
Guest speakers: Olmsted County Commissioner David Senjem and MN State Representative Patty Acomb, chair, Climate and Energy Finance and Policy Committee (tbc)

- **Germany Travel Logistics**
- 2:40-3:00 “Serving as Citizen Ambassadors for Minnesota and the USA in Germany ”
Guest speakers: David Senjem and Rep. Patty Acomb (tbc)

- 3:00-3:15 break

- 3:15- 4:45 pm - Logistics and preparing to go to Germany! Packing, transportation in country, lodging arrangements, food, cell phone and internet, communication back home, technology needs. Social media.
 - Alumni presentation
- 4:45-5:00 pm - final questions, reflection and assignments

Study Abroad segment, Jan. 7-19, 2025 (please note: some sessions subject to change)

Tuesday, 1/7 *group flight departure to Amsterdam and Duesseldorf*
Students will travel as a group from MSP. Delta Airlines flight 162 to Amsterdam
students to meet at group check-in desk at 3:30 PM

Wednesday, 1/8 *arrival in Duesseldorf, Germany; proceed to hotel*

Leonardo Hotel Royal Duesseldorf Koenigsallee
Graf-Adolf-Platz 8-10, 40213 Düsseldorf, Germany

group dinner at restaurant

Thursday, 1/9 Germany's Energy and Climate Transition—the state and municipal levels:
Structures, Players, Status
morning:
group hosted by the Ministry of the Environment, Nature Conservation and
Transport of the State of North Rhine-Westphalia (MUNV)

- Presentations on government structures
- Climate adaptation efforts in NRW and MN
- Circular economy

Mid-day, early afternoon:
Visit to NRW State Parliament and conversation with representatives of major
political parties (conservative CDU, big-tent environmental Die Gruenen, liberal
SPD, and free-market FDP).
HOST: Angela Freimuth (Mdl), member of NRW State Parliament and chair, USA
parliamentarians group [tbc]

afternoon:
NRW Ministry of Economic Affairs, Industry, Climate Action and Energy of the
State of North Rhine-Westphalia MWIKE [tbc]

- Presentations on NRW climate policy and goals and municipal climate
action
- Discussion with ministry/agency/municipal staff
- Window on Minnesota presentation to NRW partners: 2 student teams
report on aspects of MN's energy transition

Evening: formal networking group dinner at the invitation of NRW Ministry of
the Environment, Nature Conservation and Transport with deputy minister
Viktor Haase, NRW climate and environmental protection leaders, CSM NRW
partners and stakeholders. Short statements by student delegation members to
officials

Friday, 1/10 site visit day: climate change, resilience, climate adaptation
[location tba]

Saturday, 1/11	<p>Cultural Day—Art, History, Urban Life Group visit to Medienhafen urban redevelopment, Kunstmuseen K21, and traditional coffee shop Evening open for individual activities</p>
Sunday, 1/12	<p>morning: <i>Departure by train to Muenster; check into Muenster hotel</i></p> <p>Hotel Flowers Wolbecker Str. 16A 48155 Münster</p> <p>Afternoon: Walking tour of Muenster, one of Germany’s largest university towns and Germany’s acknowledged “bicycle capital” (pop. 300,000 including 55,500 students) Evening: Group dinner with special guests from University of Applied Sciences Muenster</p>
Monday, 1/13	<p>Germany’s energy transition and applied research: Group hosted by FH Muenster University of Applied Sciences International Office Program organized in cooperation with Dr. Christof Wetter and Dr. Elmar Bruegging, FH Muenster University of Applied Sciences and students Interactive format. Program includes mini-presentations/ briefs by teams of U of M student delegation members and FH Muenster student peers on aspects of Minnesota’s and NRW’s energy and sustainability efforts</p>
Tuesday, 1/14	<p>Saerbeck site visit day 1: Integrated Approaches to the energy transition Focus on Saerbeck’s bioenergy park (biomass, wind power, PV arrays, energy storage concepts, combined heat and power, micro grids) Site visit to Enapter, local manufacturer of modular electrolyzers (tbc)</p> <p>Speakers/hosts: Dr. Tobias Lehberg, Mayor of Saerbeck; Dr. Judith Stander-Dulisch; Martin Sammler, technical lead for Saerbeck’s climate-smart community projects; Dr. Christoph Wetter and Dr. Elmar Bruegging, FH Muenster University of Applied Sciences</p> <p>Evening: community outreach event “A Westphalian Evening” with invited guests from business and nonprofit sectors (cross-generational panel discussion with Saerbeck leaders, MN student delegation members, and UofM instructors)</p>
Wednesday, 1/15	<p>Saerbeck site visit day 2: Interactive Workshop site visit to Saertex, local manufacturer of multiaxial fabrics and core materials (tbc) Workshop: How to envision and organize change—students develop a comprehensive integrated climate and renewable energy communication strategy for the City of Morris (or another CSM project city) or Stephens County Workshop leaders: Troy Goodnough, sustainability director, UMM, and Martin Sammler, technical lead for Saerbeck’s climate-smart community projects</p>

Thursday, 1/16	<p>Integrated Approaches in a large city: City of Muenster. Host: City of Muenster bike tour and site visits</p> <ul style="list-style-type: none"> ● Climate change and city action ● Multi-modal transportation systems ● Muenster as a city of peace and solidarity: from the 1648 Peace of Westphalia to today's solidarity with arriving refugees ● Living Library cultural experience [tbc]
Friday, 1/17	<p>Germany's energy transition and applied research—water/energy nexus & maker lab Hosts: Dr. Christoph Wetter and Dr. Elmar Bruegging, FH Muenster University of Applied Sciences Seminar and hands-on day at various labs</p>
Saturday, 1/18	<p>day open for individual activities in Muenster; concluding group dinner</p>
Sunday, 1/19	<p>DL163 departure from Amsterdam at 12:35 for arrival at MSP at 2:55 PM Students to leave hotel at 8 AM, travel to AMS airport by train from Muenster. group will travel to AMS by coach bus. Departure at 5 AM sharp.</p>

Embedded 2025 spring semester course segments

Session #3: Friday, February 7, 2025 2:00-5:00pm, virtual meeting "Research Presentations on Final Projects"

Students present their research results to a group of energy leaders and discuss insights.

Session #4: Monday, March 31, 2025, 6:00-9:00 PM, on-campus Twin Cities, McNamara Alumni Center Program Celebration Dinner Discussion "Renewable Energy and Climate Insights for Minnesota"

Students share and discuss their insights and visions for Minnesota with family and MN leaders who have been part of the energy and climate exchange with Germany. All participants' family members will be formally invited to attend this special dinner discussion.