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2023北京国际模拟联合国大会
Beijing International Model United Nations 2023

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Background Guide

European Council

Topic A: Ensuring Security and Sustainability of European Energy Supply

Topic B: Digitalization of Management and Resettlement of Inflowing Refugees

青年携手 命运共同

JOINED HANDS , SHARED FUTURE

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Welcome Letter

Dear delegates,

Welcome to the European Council at Beijing International Model United Nations 2023! The Directors would like to extend our warmest greetings to you all.

The discussions in our committee this year will be focused on two rather different fields: energy security and refugee management. The commonality between these topics lies in their shared relevance to the Russia-Ukraine Conflict that broke out in February, 2022. Energy insecurity and the refugee dilemma are both chronic problems exacerbated by this Conflict. Since its outbreak, the global energy market has seen a dramatic drop in energy supplies and a sharp rise in energy prices. Military operations in Ukraine have displaced millions of residents, most of whom sought refuge in countries within the European Union (EU). In this context, the EU Member States are placed in unprecedented dilemma in the Conflict due to their special geopolitical situation.

On the one hand, they are politically aligned with the United States in opposing Vladimir Putin's military operations in Ukraine. Sanctions have been imposed on Russia and support have been offered to accommodate displaced Ukrainians. On the other hand, EU countries are by no means immune to the backlash of their actions. Their overdependence on Russian gas supply and incapacity for appropriate governance over Ukrainian refugees have left them stranded at a crossroad. In this context, it is vital for the EU Member States to reflect on their internal weaknesses, reevaluate their practical interests, negotiate for better coordination, enhance regional solidarity, and readjust their political priorities amid the unoptimistic status quo.

This Background Guide aims to provide delegates with elaboration on the dilemma faced by the EU, and offer preliminary ideas on how these issues could possibly be solved. While our committee has striven hard to address both the symptoms and the root of the problem, our provision of insights and solutions is not without its limits. Delegates are therefore encouraged to conduct extended researches on the topics, and complement our imperfections with your own creativities.

The Directors sincerely wish you all a memorable and fruitful academic journey with us in BIMUN 2023 this May!

Warmest Regards,

Directors of European Council

January, 2023

Introduction to the Committee

The European Council is a collegiate body that defines the European Union's political directions and priorities. It was first established in 1974 as an informal summit, and became a formalized institution in 2009 by virtue of the Treaty of Lisbon.

The European Council operates mainly by holding EU summits and setting up policy agendas for the EU.[1] Heads of state or government of the EU Member States gather in Brussels at least four times a year to attend meetings of the European Council.[2] While the national leaders each hold their respective national stances, they often tend to form alliances based on their common interests, which formulates the dynamic of the summits. By the end of each summit, a conclusive document dubbed the European Council Conclusion is often adopted, which targets specific actions for the issues discussed by the Council. Strategic agendas are further set up, identifying priority areas for longer-term efforts. The Indicative Leader's Agenda, a work programme in response to challenges the EU faces, is initiated along with the strategic agenda, presenting topics for forthcoming meetings. Decisions are usually made by consensus, especially when it comes to the Council's Conclusions. However, substantial decisions such as the adoption of legal acts would be decided by vote.

The European Union functions under a delicate yet complicated structure. Among the seven main institutions of the EU, the three main bodies are the European Commission, the European Parliament, and the Council of the European Union. The relationship between these institutes is demonstrated in the figure below. To better understand the mandate of the European Council, it is important for delegates to draw a clear line between the European Council and the Council of the European Union. While the former defines the political priorities, the latter is in charge of negotiations and adoption of legislations. What is more, the Council of the EU members are national government ministers from the EU Member States, while the EU Summits are attended by heads of state or government only. Another organization that is often confused with the aforementioned "Councils" is the Council of Europe (COE), which is actually not an EU institution but an international organization with a broader membership.[3]

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1   European Council, "Setting the EU's Political Agenda," *European Council & Council of the European Union,* January 3, 2023 Accessed, https://www.consilium.europa.eu/en/european-council/role-setting-eu-political-agenda/.

2   Council of the European Union, "Consolidated Version of the Treaty on European Union and the Treaty on the Functioning of the European Union," *Council of the European Union*, April 30, 2008, January 2, 2023 Accessed,
https://www.consilium.europa.eu/en/documents-publications/publications/consolidated-versions-treaty-european-union-treaty-functioning-european-union-charter-fundamental-rights-european-union/.

3   European Council, "What is the Council?" *consilium.europa.eu*, February 3, 2023 Accessed, https://www.consilium.europa.eu/en/council-eu/what-is-the-council/.
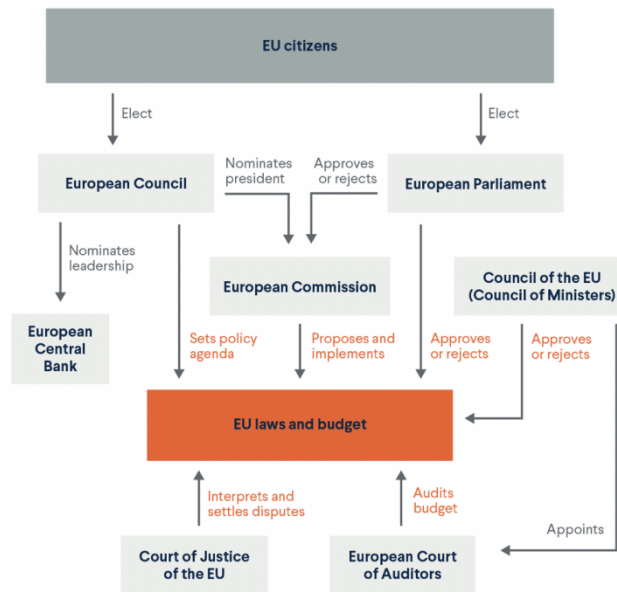
Figure 1 EU Institutions[4]

Regarding recent affairs of the European Council, the Strategic Agenda (2019-2024) focuses on four main priorities, namely "protecting citizens and freedoms, developing a strong and vibrant economic base, building a climate-neutral, green, fair and social Europe, and promoting European interests and values on the global stage."[5] To zoom in, the Indicative Leader's Agenda 2022 was established in response to Russia's special military operations in Ukraine. Priorities are laid in the economy, energy crisis, green transition, the EU's neighborhood, and relations with international partners. Despite the unprecedented challenges and uncertainties, the European Council will continue to serve firmly and responsibly as the compass that guides the European Union towards a brighter future.

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4   CFR, "How Does the European Union Work?" *Council on Foreign Relations*, March 11, 2022, February 8, 2023 Accessed, https://www.cfr.org/backgrounder/how-does-european-union-work#chapter-title-0-3.
5   European Council, "A New Strategic Agenda 2019-1024," *European Council & Council of the European Union*, June 20, 2019, January 3, 2023 Accessed, https://www.consilium.europa.eu/en/press/press-releases/2019/06/20/a-new-strategic-agenda-2019-2024/.

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General Introduction

I. General Idea of the Topic

As is mentioned in the previous sections, both our topics will unfold in the context of the Russia-Ukraine Conflict. The orientation of this committee, however, is not to push for negotiations or interest exchanges between the conflicting parties, but to seek countermeasures from the perspective of the European Union. In other words, the initiative is on the European side alone, and delegates are therefore required to carefully evaluate their policies, extrapolate possible reactions from external stakeholders, balance between gains and losses, and decide on the optimal paths to take.

The first objective of this conference is to ensure the security and sustainability of the overall energy supply in Europe. There are many contributing factors to the current energy crisis. First, the EU countries' vulnerability in face of the energy crisis resulted mainly from its overdependence on Russian supplies. It is estimated that energy imports from Russia accounted for over a quarter of Europe's energy consumption as of 2022, only second to the 42 percent of supplies produced domestically.[6] The disproportionate supply sources further indicates a deficiency in alternative suppliers and trade partners. In other words, the EU countries have not yet secured enough energy channels (or at least affordable ones) that could compensate for the potential loss of breaking away from Russian supplies. As the world gradually recovers from the COVID-19 pandemic, the resumption of industrial productions has brought another surge in energy demand from households and enterprises, which widened the gap between energy supply and demand in Europe.

Second, the disrupted energy supply chain resulted in excessive energy prices in the global energy market, the impact of which soon spread across many economic sectors and reduced the European Union's overall economic capacity. The rising energy costs is passed on through the entire supply chain, which reduced not just the affordability of many commodities but also the purchasing power of nations and households. Industries impaired by the rising energy costs transferred their production sectors to regions with lower energy prices, and such outflow added pressure to the EU manufacturing industry. Implications on individuals can also be found in households where energy is almost unaffordable. The coming cold winter, along with the stranded electricity, further heralds a potential humanitarian crisis.

Third, while there are many approaches to enhancing energy security, the approaches themselves are not without limitations. With an early awareness of environmental consequences of burning fossil fuels, along with the disproportionate energy mix, European countries have long been striving to promote the use of renewable energies. But green transition is by no means a panacea for European energy security. Currently, the governments' superstructural policy design for green transition is to some extent beyond European countries' financial and technological capacities. Insufficient match between objectives and realities, as well as incoordination among EU Member States, are more likely to harm the energy status quo than to solve its problem.

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6   Douglas Broom, "What is the EU doing to end its reliance on Russian energy?" *World Economic Forum Annual Meeting*, April 26, 2022, January 27, 2023 Accessed, https://www.weforum.org/agenda/2022/04/europe-russia-energy-alternatives/.

The second topic of our committee is the digitalization of management and resettlement of inflowing refugees, particularly the newly-emergent displaced persons from Ukraine. In this topic we aim to combine the traditional dilemma of refugees management with the novel trend of digital transformation, and seek to optimize the refugees governance with the assistance of more advanced technologies.

To better facilitate our discussions, it is important to understand the two-sided attributes of digitalization. On the one hand, digitalization offers a brand-new solution to the long-standing refugees dilemma. The application of digital tools is expected to help break traditional technical barriers, including the incomplete refugees identification and documentation system, the absence of proper monitoring, the insufficient transparency and information update among Member States, and the disproportionate allocation of resources. On the other hand, digitalization itself brings along new forms of problems that further require careful solutions. For example, the inadequate refugees documentation at the borders would reduce the effect of data analysis, and the absence of a unified information platform would create barriers for countries to manage the transborder movement of refugees. The application of digital technologies also entail potential security risks such as privacy breach, which may give rise to information abuse and other criminal and cybercriminal activities.

To conclude, it is vital that members of the EU consider more pragmatically about the choices they made, and seek a more rational balance between their political stances and socioeconomic stability. This conference is designed to facilitate such a discussion where countries can reappraise their current policies and examine the new possibilities in a more pragmatic manner.

II. Key Terms

a. Energy Security

According to the International Energy Agency (IEA), energy security is defined as an uninterrupted availability of energy sources at an affordable price.[7] By its definition, energy security would require a reliable internal and external provision of energy, a diversified and well-proportioned energy mix, and an efficient and effective market regulating mechanism. In our specific context, the energy security within the EU majorly indicates a resilient and secure energy supply.[8] Since the outbreak of the Russian-Ukraine Conflict, the greatest challenge to EU's energy security comes from its export-dependent energy structure and declining external import. Therefore, the core of strengthening the European Union's energy security is to increase independence, self-sufficiency, and sustainability.

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7   IEA, "Energy Security," *International Energy Agency*, February. 8, 2023 Accessed, https://www.iea.org/topics/energy-security.
8   European Commission, "Energy Security," *European Commission*, February. 8, 2023 Accessed, https://energy.ec.europa.eu/topics/energy-security_en.

b. Energy Transition

Energy transition (also dubbed as "green transition") is the process of downshifting fossil fuels and optimizing the energy system. This can be achieved by balancing fossil fuels and carbon-zero energy resources. Generally, countries strive for green transition with the aim of reducing carbon emissions and mitigating the impacts of climate change.

For the EU countries, energy transition is also key to ensuring energy security in the face of insufficient fossil fuel import. Green Transition includes a coordinated system of measures, from the development of renewable energies to the application of economic instruments. By shifting its energy mix, the EU is taking one crucial step towards a sustainable energy system while approaching its goals of climate neutrality.

c. Digitalization

Digitalization is the process of optimizing a certain process or enhancing its efficiency through the application of digital technologies. Generally, digital technologies can provide new solutions or improve the conditions for solving traditional problems. The refugee management dilemma is a typical case where the application of digital technologies has made a huge difference. Under the topic of our committee, digitalization embeds digital tools and services that collect and analyze data in a more efficient and intelligent way in order to support smart planning and provide better references for decision-making. Typical technologies include biometric identification, blockchain technology, and data management. In general, digitalization results from a combination of digital talent, digital regulation, data governance, digital attitudes, and the availability of capital.[9]

d. Inflowing Refugees

According to the definition by the United Nations High Commissioner for Refugees (UNHCR), refugees are people who have fled war, violence, conflict, or persecution and have crossed an international border to seek protection from another country. [10]It is to be noted that, in this very conference, the group of refugees that our committee will mainly address is defined in a rather narrow sense. Specifically, our topic encompasses Ukrainian refugees flowing into EU countries due to the Russia-Ukraine Conflict that broke out in February 2022. The outbreak of the crisis meant that receptions are urgently needed due to the sudden inflow of refugees. The refugee dilemma that faces Europe entails various uncertainties, including mass flight, responsibility division, humanitarian assistance, identity documentation and many other concrete aspects.

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9 IMD, "World Digital Competitiveness Ranking," *International Institute for Management Development,* January 24, 2023 Accessed, https://www.imd.org/centers/world-competitiveness-center/rankings/world-digital-competitiveness/.
10 UNHCR, "What is a refugee?" *United Nations High Commissioner for Refugees*, January 24, 2023 Accessed, https://www.unhcr.org/what-is-a-refugee.html.

Topic A: Ensuring Security and Sustainability of European Energy Supply

Current Situation

I. Overview of the Current Situation

The outbreak of the Russia-Ukraine Conflict on 24 February, 2022 triggered a massive energy crisis. The gas prices in Europe rose by 22 percent on the second day of the Conflict, with a wide range of repercussions for the economy and people's livelihoods.[11] The tension in the natural gas market started from mid-2021 when storage remained below average. The European Union now faces an unstable and insecure energy supply exacerbated by the cut in Russian gas imports.

With the decline in external supplies, sanctions are launched simultaneously by the EU regarding energy sectors. By the end of September, leaks were spotted from the Nord Stream 1 and Nord Stream 2, two major pipelines transporting gas from Russia to Europe. This instantly resulted in a 12% surge in natural gas prices.[12] In the meantime, liquified natural gas (LNG) ships were sailing across the seas to EU, arriving with immediate gas supply and returning with a hundred million dollars per ship.[13] Declines in energy prices have recently occurred as gas storage is approaching its maximum and as governments are implementing macroeconomic instruments to stabilize the European energy market and guarantee energy supply.

The EU is accelerating its development in renewable energy and takes the energy crisis as an opportunity to reform its energy structure and promote green transition. Goals for climate protection, including the Climate Neutrality goal by 2050 and reduction of at least 55% of greenhouse gas emissions by 2030, have been established and consolidated through EU legislation since 2021.[14] However, the development and deployment of renewables cannot be achieved overnight. The European Union is about to go through a transition in the energy mix aiming at both short-term relief and long-term sustainability.

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11   Gas. In-EN, "Russia's Conflict with Ukraine Has Sent Gas Prices Soaring 22% in Europe," *GasInternational*, February 25, 2022, January 27, 2023 Accessed, https://gas.in-en.com/html/gas-3654176.shtml.

12   Elena Mazneva and Anna Shiryaevskaya, "European Gas Jumps as Ukraine Flows at Risk in Transit Spat," *Bloomberg*, September 27, 2022, January 27, 2023 Accessed, https://www.bloomberg.com/news/articles/2022-09-27/european-gas-prices-rise-amid-outages-at-idled-russian-pipelines.

13   Dong Zhao, Yupeng Liu, "Europe's Energy Crisis, the United States Profiteering! An LNG Ship to Europe Could Earn More than $100 Million," *Global Times*, August 31, 2022, January 27, 2023 Accessed, https://world.huanqiu.com/article/49SO5WPdfpb.

14   Council of the EU, "Climate Change: What the EU is Doing," *European Council & Council of the European Union*, January 27, 2023 Accessed, https://www.consilium.europa.eu/en/policies/climate-change/.

II. Past Efforts

a. European Energy Strategies

The European Union has long been faced with energy issues such as increasing import dependency, limited diversification of supplies, unstable energy prices, growing global energy demand and slow progress in promoting energy efficiency. Most of these problems were exacerbated by the Russia-Ukraine Conflict. In recent years, the core objectives of the EU's energy policies include seeking energy independence, security of energy supply, building an integrated energy market and a sustainable energy sector.

A series of energy strategies have been issued in recent decades, among which the ones adopted between 2010 and 2014 laid the groundwork for current EU energy laws and initiatives. According to the *Energy 2020 strategy for competitive, sustainable and secure energy* (generally referred to as the "20-20-20" target), efforts are to be made to reduce EU greenhouse gas emission by at least 20%, increase renewable energy consumption to over 20% while achieving energy savings to 20% or more. The goal was to help the EU cope with climate change and air pollution and decrease its dependence on fossil fuel imports.[15] In 2011, *The Energy Roadmap 2050* was set with the intention of reducing greenhouse gas emissions by 80-95% compared to 1990. The Roadmap stated four main routes to a more sustainable and secure energy system in 2050: energy efficiency, renewable energy, nuclear energy, and carbon capture and storage. It also provided seven possible scenarios for 2050 through recombination.[16] In October 2014, the European Council adopted its 2030 Framework for climate and energy. The new framework includes EU-wide targets and policy objectives between 2020 and 2030. This was based on an initial Commission communication on *A policy framework for climate and energy from 2020 to 2030* published in January 2014.[17] The *European Energy Security Strategy* was released by the European Commission in May 2014, which served as a building block for the later Energy Union strategy.[18]

The Energy Union, established in response to a request by the EU heads of state and government in 2015, is based on the three long-established objectives of EU energy policy: security of supply, sustainability, and competitiveness. With full awareness of the crucial role of energy efficiency in achieving these goals, the EU established and promoted "Energy Efficiency First" as a fundamental principle of the Energy Union, and energy efficiency has been considered an energy source in its own right since then.[19] The Energy

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15   European Commission, "Energy 2020: A strategy for competitive, sustainable and secure energy," *EUR-Lex*, November 10, 2010, January 9, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0639&from=EN.

16   European Commission, "Energy Roadmap 2050," *EUR-Lex*, November 10, 2014, January 9, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0885&from=EN.

17   European Commission, "A policy framework for climate and energy in the period from 2020 to 2030," *EUR-Lex*, January 22, 2014, January 9, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0015&from=EN.

18   European Commission, "European Energy Security Strategy," *EUR-Lex*, May 28, 2014, January 9, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0330&from=EN.

19   ECEEE, "Energy Union," *European Council for an Energy Efficient Economy*, January 5, 2023 Accessed, https://www.eceee.org/policy-areas/energy-union/.

Union served as an umbrella that brought all the elements together and formed them into a coherent and comprehensive approach.

One of the EU's vital principles is to strengthen equality and inclusion. Regarding its energy sector, an "Equality platform for the energy sector" was established in 2021 to discuss equality, facilitate experience exchange and highlight best practices.[20] As the pursuit of 2050 ambitions, energy policy plays an increasingly important part in economic growth and social well-being. Therefore, the Platform plays a crucial role in promoting equal opportunities for stakeholders at all levels, including energy professionals, decision-makers, and consumers.

Other initiatives such as the EU Sustainable Energy Week and EU Energy Day have also been carried out to promote the integration of various stakeholders. During their activities, a broad range of partners are gathered for exchanges and further collaboration, including policymakers, industry representatives, businesses, civil society organizations, and citizens. These projects are devoted to promoting renewables and a more efficient energy use in Europe, setting stages for coordination and advanced experience sharing.

b. Emergency Response Programs

In response to the Russia-Ukraine Conflict, a package of emergency programs was introduced with the ultimate goal of achieving independence from Russian fossil fuels before 2030. The most significant action is "REPowerEU: Joint EU action for more affordable, secure and sustainable energy" on 18 May, 2020, claiming the EU's intention to phase out its dependency on Russian energy import and to increase the resilience of the energy system.

As is illustrated in the figure below, the REPowerEU plan is mainly divided into four aspects: saving energy, diversifying supplies, accelerating Europe's clean energy transition to substitute fossil fuels, and smartly combining investments and reforms.[21]
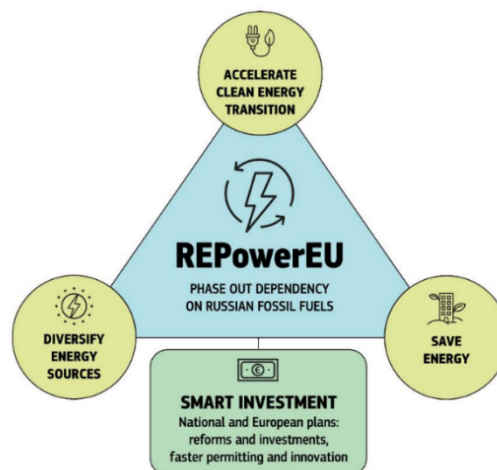
Figure 2 the Illustration of the REPowerEU Plan[22]

20   European Commission, "Equality platform for the energy sector," *European Commission*, January 5, 2023 Accessed, https://energy.ec.europa.eu/topics/energy-strategy/equality-platform-energy-sector_en.
21   European Commission, "REPowerEU Plan," *Eur-Lex*, May 18, 2022, January 5, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483#document2.
22   European Commission, "REPowerEU Plan," *Eur-Lex*, May 18, 2022, January 5, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483#document2.

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Saving energy is the quickest and cheapest way to ease the current crisis. A two-pronged approach came up: promoting pending agreement and structural change while saving energy through behavior changes. For example, a "Playing My Part" plan was launched to reduce energy use in the EU in cooperation with the International Energy Agency (IEA). It is estimated by IEA that these short-term energy-saving actions could reduce 5% of the demand for gas and oil.[23]

To boost the development of renewable energy, Member States are recommended to take full advantage of different sources. The European Solar Rooftop Initiative has been introduced as an example of solar photovoltaics. The initiative is anchored around a legally binding EU solar rooftop obligation for certain categories of buildings.[24] Other recommended measures include exploiting industrial heat, scaling up biomethane, and accelerating the development of hydrogen power.

To protect individuals suffering from the volatile energy prices or potentially at risk of energy poverty, the Commission calls upon the European Parliament and Council of the EU to adopt its proposal for a Social Climate Fund to save the vulnerable group.[25] The Fund will also help to support small businesses in transition and households in want.

c. Efforts towards Green Transition

Two directives on renewable energies were passed in the past 20 years. The original *Renewable Energy Directive* was adopted by the decision of European parliament and council on 23 April 2009 (Directive 2009/28/EC, repealing Directives 2001/77/EC and 2003/30/EC). It is established in the directive that at least 20% of EU energy consumption must come from renewable energy sources by 2020.[26] In the *Directive*, Member States are commanded to specify their plans to meet their individual targets and the renewable energy action roadmap. Progress was to be assessed every two years based on the progress reports submitted by Member States.

In preparation for the coming decade, the European Green Deal was adopted, which painted the blueprint for a new economic model shift. This green pact set out a detailed vision to make Europe a climate-neutral continent by 2050 by supplying clean, affordable, and secure energy.[27] In July 2021, an amendment to the Renewable Energy Directive was proposed to match its renewable energy targets with its new climate ambition. This revised Directive set a new binding target for Member States that renewable energy should account for at least 32% of consumption by 2030. Member countries will raise their new national energy targets and establish a 10-year national plan towards 2030,

23   European Commission, "REPowerEU Plan," *Eur-Lex*, May 18, 2022, January 5, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483#document2.
24   Satish Shetty, "EU Proposes Mandatory Rooftop Solar for All New Buildings in Member States," *mercomindia*, May 19, 2022, January 9, 2023 Accessed, https://mercomindia.com/eu-proposes-mandatory-rooftop-solar-for-all-new-buildings/.
25   European Commission, "Social Climate Fund," *European Commission*, January 9, 2023 Accessed, https://climate.ec.europa.eu/eu-action/european-green-deal/delivering-european-green-deal/social-climate-fund_en.
26   European Commission, "Renewable energy directive," *European Commission*, January 5, 2023 Accessed, https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en#:~:text=The%20renewable%20energy%20directive%20is%20the%20legal%20framework,growing%20yearly%2C%20reaching%20more%20than%2022%25%20in%202020.
27   European Commission, "Delivering the European Green Deal," *European Commission*, January 5, 2023, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en.

along with progress reports on a two-year basis. These plans will be assessed by the Commission to make sure they match the overall EU targets.[28]

Under the European Green Deal framework, Member States are working on new legislation—fit for 55--to achieve its emission reduction goal and make itself climate neutral by 2050. The new climate legislation made it the EU's goal to cut emissions by at least 55% by 2030, compared with 1990.[29] In the Fit for 55 packages, a consensus has been reached on revising the energy efficiency directive, and this program paves the way for the EU's energy-efficiency progress.

Problems to be Solved

I. Insecurity Resulting from External Overdependence

The significance of energy to Europe can be reflected throughout the history of the European integration. Western European countries feature a natural shortage of fossil fuels, which stood in stark contrast to the size of their population and economy.[30] After the World War II, the European Coal and Steel Community (ECSC) was established to better integrate and regulate the coal and steel industries in Western Europe and optimize the distribution of European energy supplies. Nevertheless, the internal supply is far from enough for the rapid socioeconomic development in Europe. Over the years, European countries have relied on external suppliers in Eastern Europe and the Middle East, but such dependence has proven to bring energy insecurity and instability in the long term.

a. Imbalance of Energy Supply and Demand

The first prominent impact of the Russia-Ukraine Conflict on European energy is the severe reduction of energy supplies. Since the outbreak of the Conflict, European countries have imposed sanctions on the coal and oil imports from Russia, and major Russian gas companies have in return cut their supplies to Europe. Between February and October 2022, the natural gas pipeline flows from Russia to the European Union and Türkiye has been reduced by 80%.

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28   European Commission, "Renewable energy directive," *European Commission*, January 5, 2023 Accessed, https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en#:~:text=The%20renewable%20energy%20directive%20is%20the%20legal%20framework,growing%20yearly%2C%20reaching%20more%20than%2022%25%20in%202020.

29   European Council, "Infographic - Fit for 55: how the EU will become more energy-efficient," *European Council,* January 6, 2023 Accessed, https://www.consilium.europa.eu/en/infographics/fit-for-55-how-the-eu-will-become-more-energy-efficient/.

30   陈小沁：《能源战争：国际能源合作与博弈》，新世界出版社，2015 年，第 139 页。
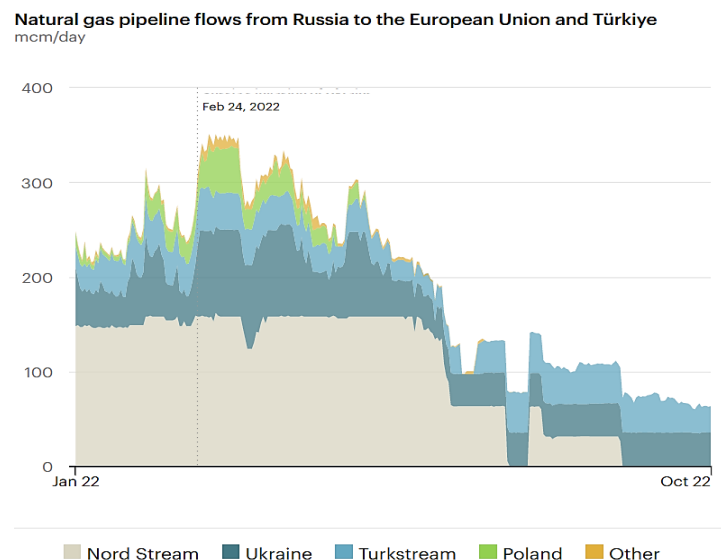
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Figure 3 Natural gas pipeline flows from Russia to the European Union and Türkiye (mcm/day)[31]

According to the Russian gas giant Gazprom which holds a majority stake in Nord Stream AG, the gas exports to foreign markets totals 100.9 billion cubic meters in 2022, indicating a 46% drop compared to 2021.[32]

On the other hand, energy demand within and beyond the European Union has been rising. In the short term, the world's recovery from COVID-19 implies a restoration of manufacturing and consumptions in the market and hence a rebound of demand for energy. In the long term, it is anticipated in the *World Energy Outlook 2022* that the rising energy demand underpinned by economic growth would arrive at an average of 2.8% per year through to 2050.[33]

When the strained supplies collide with the constant increase in energy demand, a gap in the energy market would occur and cause market turmoil that further impose pressures on different market entities.

b. Monostructure of Supply Sources

The external overdependence entails not just the large proportion of imports but also the monostructure of external supply sources. The philosophy of investment shows that one's asset is hardly secure if all eggs are put into a single basket. Similarly, a critical contributor to today's energy crisis in Europe is the lack of diversified suppliers that can compensate for the losses of energy import. The figure below demonstrates the extra-EU importers of natural gas. It can be observed that today's EU gas imports are dominated by six major suppliers, with Russia in the lead until the second quarter of 2022.[34] This is largely due to the packages of import sanctions imposed on Russia since the outbreak of

31   IEA, "World Energy Outlook 2022," *International Energy Agency*, October 2022, January 15, 2023 Accessed, https://www.iea.org/reports/world-energy-outlook-2022.

32   The Moscow Times, "Gazprom Exports to Europe Nearly Halve in 2022," The Moscow Times, December 29, 2022, January 13, 2023 Accessed, https://www.themoscowtimes.com/2022/12/29/gazprom-exports-to-europe-nearly-halve-in-2022-a79831.

33   IEA, "World Energy Outlook 2022," *International Energy Agency*, October 2022, January 15, 2023 Accessed, https://www.iea.org/reports/world-energy-outlook-2022.

34   Eurostat, "EU Imports of Energy Products − Recent Developments," *Eurostat*, December 2022, January 25, 2023 Accessed, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_recent_developments#Main_suppliers_of_natural_gas_and_petroleum_oils_to_the_EU.
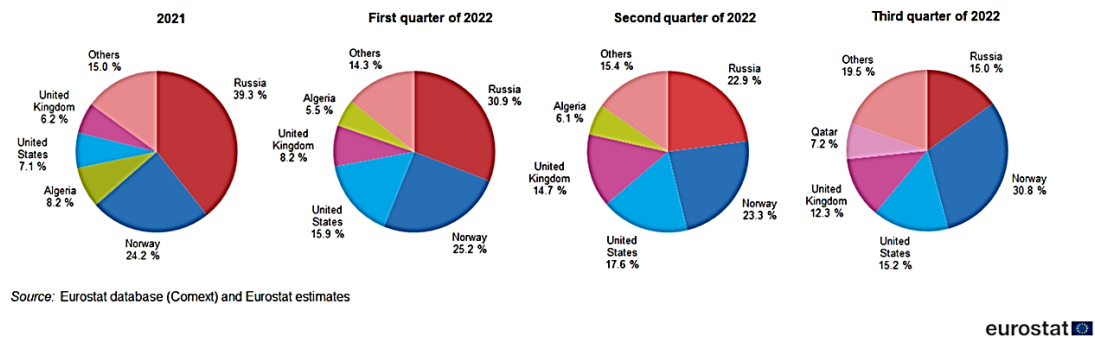
the Conflict.

Figure 4 Main Suppliers of Natural Gas to the EU[35]

In terms of petroleum oil imports to the EU, major trade partners include Russia, the United States, Norway, Saudi Arabia, Iraq, Kazakhstan, Libya, Nigeria, and the United Kingdom. Nevertheless, the future prospect of oil import is by no means optimistic.

Endeavors have been made by the EU to increase the diversity of energy import sources. From the beginning of the 21st century, the EU began to negotiate with neighboring countries on establishing multilateral platforms for energy cooperation, with the aim of expanding its internal energy market beyond the scope of Eastern and Southern Europe. Targeted regions included the Black Sea region, the Transcaucasia region, and Central Asia. Nonetheless, the REPowerEU plan issued by the European Commission reflected concerns over building partnerships with "non-democratic" and "politically unstable" countries.[36] Other barriers that may prevent countries from joining the extra-European integrated energy community include their unwillingness to comply with European standards and market rules.

c. Dependence on Volatile External Suppliers

Over 40% of European fossil fuel supplies are imported from Russia to this day. In the past, a stable energy relationship with Russia is in the interest of European countries. But with the mounting geopolitical tension between Russia and Western Europe in recent years, placing strategic resources at the disposal of external stakeholders is like entrusting the Sword of Damocles to a potential enemy.

Early in 2007, the European Commission has recognized the underlying risk in the security of energy supply. According to a communication in October 2007 from the Commission to the European Council, in a business-as-usual scenario, the EU's energy import dependence is expected to rise from 50% of total EU consumption to 65% in 2030. In particular, the reliance on external gas import would increase from 57% to 84% and oil from 82% to 93%.[37] The Communication further highlighted that several EU Member

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35   Eurostat, "EU Imports of Energy Products − Recent Developments," *Eurostat*, December 2022, January 25, 2023 Accessed, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_recent_developments#Main_suppliers_of_natural_gas_and_petroleum_oils_to_the_EU.

36   EESC, "REPowerEU Plan," *European Economic and Social Committee*, September 7, 2022, January 20, 2023 Accessed, https://op.europa.eu/en/publication-detail/-/publication/81040a44-38f2-11ed-9c68-01aa75ed71a1/language-en/format-HTML/source-279573152.

37   Commission of the European Communities, "Communication from the Commission to the European Council and the European Parliament: An Energy Policy for Europe," *Commission of the European Communities*, January 10, 2007, January 10, 2023 Accessed, https://op.europa.eu/en/publication-detail/-/publication/9101412c-b091-4813-a3b8-37732a25d19d/language-en/format-PDF/source-279569896.

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States, especially Germany by the time, are largely or completely dependent on one single gas supplier. The fact that EU countries have varying degrees of external dependence indicates their divergent attitudes towards taking substantial measures to curb Russian imports, and potentially divided stances towards the future of European energy security.

II. Impact of Energy Crisis on Domestic Economy

a. Substantial Surge in Energy Prices

The main factors affecting market price include the supply and demand of a product, the cost of production and transportation, and the prices of its substitutes and complements. The price comprises three parts: production cost, transportation cost, and profit. The rise in either cost would lead to a simultaneous rise in the market price. Changes in the price of a commodity then affect its supply and demand. Higher prices would cause a rise in supply and a drop in demand, while a decrease in prices would boost demand while limiting supply.[38]

As the energy crisis spreads, European energy prices have risen over 500 percent compared to the pre-crisis period, with natural gas prices increasing the most. In 2021, European wholesale energy prices rose by more than 400%, reaching a record high in its history. However, the natural gas wholesale market still faces continued volatility, giving rise to concerns that the energy crisis would exacerbate.[39]

Oil prices in European countries have repeatedly set new records in the past year, followed by slightly trimming gains. The West Texas Intermediate (WTI) crude oil price has fallen by 40 percent compared with its peak of 123 dollars in March, but there is little hope for a continued decline. According to European investment companies, there is a good chance that oil prices will increase significantly in the coming year. What has been restraining the oil trade, such as the overproduction of oil in OPEC and the temporarily suppressed demand from China, will disappear.[40]

Electric prices in Europe also skyrocketed as the prices of natural gas continued to soar. It was estimated that Europe would face a serious electricity shortage as soon as 2022 winter. Last winter, a worst case of cold weather, low wind-power generation and a 15% cut in gas use proved very challenging for the European power system, and could lead to power rationing and blackouts.[41]

Russia is Europe's largest natural gas exporter, accounting for more than 40 percent of the EU's gas imports. According to IEA, Russian exports to the EU have declined below the 2019 level by the end of 2021. Natural gas transport is partly blocked as well. It is

38   Janson Fernando, "Law of Supply and Demand in Economics: How It Works," *Investopedia*, November 7, 2021, January 11, 2023 Accessed, https://www.investopedia.com/terms/l/law-of-supply-demand.asp.

39   Chloe Taylor, "Gas prices surge again in Europe, leaving some business owners 'terrified' for the future," *Consumer News and Business Channel*, January 5, 2022, January 11, 2023 Accessed, https://www.cnbc.com/2022/01/05/european-energy-prices-are-surging-creating-frightening-uncertainty.html.

40   Cornelius Christian, "Higher oil prices are coming in 2023, European energy crisis is not over - Josh Young," *KITCO,* December 8, 2022, January 11, 2023 Accessed, https://www.kitco.com/news/2022-12-08/Higher-oil-prices-are-coming-in-2023-European-energy-crisis-is-not-over-Josh-Young.html.

41   David McHugh, "Europe is facing an energy crisis as Russia cuts gas. Here's why," *Associated Press,* September 6, 2022, January 11, 2023 Accessed, https://www.pbs.org/newshour/world/europe-is-facing-an-energy-crisis-as-russia-cuts-gas-heres-why.

reported that the flow of Russian natural gas through the main transit route has been cut by more than half by September 2021.[42] To tackle the blockade of Russia, Member States frequently visited the Middle East, Africa and other regions to seek alternative energy supplies. However, analysts say that it is unrealistic for Europe to get rid of its dependence on Russian export in the short term. On the one hand, most alternative suppliers cannot adjust their export markets immediately enough to support European market needs. On the other hand, alternative solutions may include problems of a much-longer transport process and high cost.[43] What is worse, the pandemic-related lockdowns and the freezing weather reduced the production from EU's alternative energy suppliers, including Indonesia, India and Australia. All these factors led to an energy supply disruption and contributed to the significant price hike.

Another reason for surging energy prices is Europe's continuous promotion of green energy transformation. With increased emphasis on the low-carbon transformation, investments and policies are skewing toward the development of alternative energies, resulting in shrinking traditional energy production. Meanwhile, global recovery from the pandemic revitalized the European demand for electricity, road fuel, and other normal needs. Europe's unusually cold and long winter, and the limited substitute from intermittent renewable energy are also contributing factors. The rise in energy demand has further exacerbated the gap between supply and demand, leading to an increase in energy prices.

The soaring energy prices have caused a variety of economic and social crises. From the supply side, manufactories would be forced to stop or reduce production due to the higher cost, which means both energy and energy-related product will result in a higher price. From the demand side, surging energy prices will lead to higher living costs and lower disposable income for residents. Higher energy costs lead to economic consequences as well. For example, risks facing the economic recovery are rising and economic growth could be slower than forecast. Worse still, high energy prices may influence the development of renewable energy. It is claimed that soaring energy costs jeopardize the European plan to boost solar manufacturing capacity, and it could also hinder its ambition for carbon neutrality.

b. Overburdened Industries and Businesses

The surging energy price in Europe triggered a series of chain reactions. Continuous rising prices mean higher costs, which results in a decline in output and profit. On the one hand, companies' constant losses lead to successive bankruptcy and shutdown of energy-intensive companies. On the other hand, insufficient energy supplies forced the scaling-back of heavy industries, and a large number of companies in the energy-intensive industry are closing or transferring their production abroad. According to Reuters, continental zinc and aluminum smelting capacity have been halved. European industrial activities are now reduced to their weakest level ever since May 2020, indicating that European economy may be heading for a recession. Economists warned that the European industrial base would be seriously weakened if the price continued to soar.

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42   EnergyNow Media, "European Energy Prices Surge to Records as Supply Crisis Spreads," *EnergyNow Media*, September 28, 2021, January 11, 2023 Accessed, https://energynow.com/2021/09/european-energy-prices-surge-to-records-as-supply-crisis-spreads/#.

43   康逸、朱晟、黄燕：《"北溪 -1"恢复四成供气 欧洲能源危机难解》，载《新华每日电讯》，2022 年 7 月 23 日，第 004 版。

The energy crisis can impact domestic industries and businesses in many ways. If energy prices continue to skyrocket, they can result in second-round effects: energy-intensive products could become unprofitable with high energy prices. Hence, the high prices are passed down to consumers. However, the high-priced service would undermine customers' willingness to pay the bill, which drives consumers to turn to their substitutes. As it turns out, the rapidly rising demand triggered incidental price increases in alternative services, which means the soaring price diffused. Considering all these factors, the transmission effect would result in overall market demand reduction and production shrink.

Different economic sectors are impacted in varied degrees by the increased energy costs, among which aviation and shipping are the top victims of the first-round effects. As mentioned above, energy-intensive industries accelerate flow-out to countries or regions with lower energy costs. Second-round effects occur more in the food industry, restaurant business, travel agencies and hospitality industry. For example, travel agencies carry out massive purchases from energy-intensive sectors like aviation and road transport. When airline carriers are forced to raise ticket prices due to soaring kerosine costs, the agencies would also be faced with more expensive tickets.[44] To sum up, it is their supply chains and reliance on energy-intensive industries that led to the knock-on effects.

The depletion of European heavy industry has exerted severe pressure on its economy. Yet it is just one aspect of the energy crisis. More disruptions have been provoked in the supply chain, causing devastating effects on many other aspects of European productivity. One significant consequence is the massive loss of competitiveness of European industries. Another is a renewed strong inflationary pressure: Eurostat data shows that the final annual rate of the Consumer Price Index (CPI) in July was 8.9 percent, which means annual inflation hit the record again. In the Eurozone, many inflation rates have exceeded the 10 percent mark.[45]

c. Excessive Living Costs for Households

From the first half of 2021 to the end of 2022, European household electricity prices have risen by 114% on average, and the household natural gas price soared by 214%.[46] In Europe, households account for 30 to 40 percent of the overall gas demand, 80% of which is related to heating. Since 2019, more than 12 million households have been in arrears with their utility bills and 7 million receive energy disconnection notices yearly.[47]

The energy crisis has impacted households in different ways. Most directly, the soaring energy prices mean a higher living cost for residents and a reduced disposable income. Also, with the crisis exacerbating industry output, workers in retail, hospitality and airline

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44   Maurice van Sante, Gerben Hieminga, "The ripple effects of soaring energy prices," *ING Think*, February 17, 2022, January 12, 2023 Accessed, https://think.ing.com/articles/the-ripple-effects-of-soaring-energy-prices.

45   NEWS WIRES, "Eurozone inflation hits record 8.9% despite better-than-expected growth," *France 24*, July 29, 2022, January 12, 2023 Accessed, https://www.france24.com/en/business/20220729-eurozone-inflation-hits-record-8-9-despite-better-than-expected-growth.

46   Ciaran Wark, "European Energy Prices Increase up to 500% Compared to Pre-crisis Levels," *GREENMATCH,* November 14, 2022, January 12, 2023 Accessed, https://www.greenmatch.co.uk/blog/energy-prices-europe#:~:text=Key%20findings%20about%20energy%20prices%20in%20Europe%3A%20From,household%20gas%20prices%20have%20risen%20214%25%20on%20average.

47   Nina Chopard, "Energy Prices Soar in Europe," *energy news*, August 17, 2022, January 12, 2023 Accessed, https://energynews.pro/en/energy-prices-soar-in-europe/.

sector were hit hard and faced unemployment. The dramatic surging heating costs and steeply declining family incomes put tremendous pressure on households. Some had to reduce or even stop heating to meet basic needs such as food purchases. Moreover, the decline in industrial production and sales capacity could impact the employment and revenue growth of companies, while the falling income of employees further limits consumer purchasing power and brings the economy into a vicious circle.

To lower the cost of living for residents, governments have adopted energy-saving plans. In many countries, the maximum public indoor temperature is limited to 19 degrees, while public monuments and buildings are no longer illuminated at night. Other measures include dimming street lights, car tunnels and underground crosswalks. Nevertheless, there are fears that this action would pose threats to the safety of residents.

Governments of EU Member States have proposed packages to help residents cope with the energy crisis. France plans to offer 9.7 billion euros to fully nationalize energy supplier Electricité de France (EDF) to keep the maximum electricity prices within an acceptable scale. Meanwhile, Germany is discussing a consumption tax exemption and a relief package for poor households.[48] These packages, however, could hardly suffice the public demand. In some regions, the insufficient subsidy of government is criticized as a "betrayal" by its citizens and political parties.

Food-supply chain is also faced with threats. Some producers have started to shut down due to the high cost, and those who survived are monitoring the situation closely and are planning to curtail production when necessary.

d. Case Study : Germany

By the end of 2022, the average European natural gas price stood at about 1,272 dollars per thousand cubic meters, gaining about 10 percent in total over the year.[49] The electricity price in Germany has soared to a new record for 2023, risen by almost 40% over the past 12 months. According to Agence France Presse (AFP), the price of German electricity for the year ahead would reach 850 dollars per megawatt-hour in the stock market.[50]

The energy crisis exerted devastating impacts on German industries and businesses. A key consequence is the explosive rise of heavy industry costs. According to Destatis, energy accounts for 26% of the metallurgy industry costs, 19% of basic chemical production, 18% of glass manufacture, 17% of paper, and 15% of construction materials.[51]The German Chamber of Commerce and Industry (DIHK) reported that German companies are cutting production scale due to the high cost: more than a quarter of chemical companies, and 16% of automotive companies were forced to reduce

48   Christian Kraemer, "Germany plans tax changes to help households cope with inflation," *reuters*, February 20, 2023 Accessed, https://www.reuters.com/markets/europe/germany-plans-tax-changes-help-households-cope-with-inflation-officials-2022-08-09/.

49   TEHRAN, "Gas Prices to Remain High: German Finance Minister," *Tasnim News Agency,* January 2, 2023, January 12, 2023 Accessed, https://www.tasnimnews.com/en/news/2023/01/02/2830324/gas-prices-to-remain-high-german-finance-minister.

50   PressTV, "German, French electricity prices soar to new records," *PressTV*, August 26, 2022, January 12, 2023 Accessed, https://www.presstv.ir/Detail/2022/08/26/688088/German-French-electricity-prices-hit-record-levels.

51   Ben Aris in Berlin, "Energy crisis: Europe's industry shutting down," *energy central*, September 20, 2022, January 12, 2023 Accessed, https://energycentral.com/news/energy-crisis-europe%E2%80%99s-industry-shutting-down.

production, and 17% of automotive companies are planning to relocate part of their production abroad. As the most heavily industrialized country in the EU, the closure could cause long-term damage to Germany's industrial base.

The energy crisis rocked the domestic economy as well. Germany's Producer Price Index (PPI), the indicator to measure manufacturers' input costs, was raised by 45% year to year with no sign of slowing down. The dramatic rise of the PPI also means there may still be room for domestic inflation.

Germany regularly breaks records for the highest electricity price in the EU. In the past, Germany's rising household electricity prices were often associated with high taxes. In cities such as Berlin and Copenhagen, energy taxes and value-added tax (VAT) are used to account for more than 50% of the final prices. By the end of August 2022, however, raw material costs have risen to the point where they account for the majority of end-user prices. Nevertheless, price hikes are but the tip of the iceberg. Much more daunting are the consequences that the German population could suffer from their country's existing energy crisis and further energy cuts. It is predicted by the German economic and energy minister that if Russian gas and oil were no longer available, there would be mass unemployment, poverty, and people left unable to heat their homes.[52]

So far, the German government has spent 30 billion euros to support and subsidize citizens to pay their energy bills since the end of 2021.[53] Despite the government efforts, the living conditions of the middle and lower classes have mostly stayed the same. To be completely independent of Russia's supply, Germany has yet a long way to go.

III. Barriers to Building Sustainable Energy System

a. Disproportion and Rigidity of Energy Structure

The five primary energy sources in the EU are petroleum, gas, renewable energy, nuclear energy, and solid fossil fuels. Among these, the fossil-fuel family amounts to 75.7 per cent of the energy mix, and petroleum products take up more than one-third. Fossil fuels are non-renewable, which means they cannot be replenished on a human timescale. It is estimated that oil and gas will run out in half a century, and coal will be depleted in a hundred years or so.[54] In addition to its non-sustainability in supply, fossil fuels are also far from sustainable in environmental protection. Over 80 per cent of carbon dioxide, a greenhouse gas accelerating global warming, is generated by burning fossil fuels.[55] With the awareness that an energy structure dependent on fossil fuels is unable to last, countries are having a hard time transitioning towards a greener economy: insufficient funds, technical barriers, and employment issues are all hindrances in this process.

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52   Reuters, "Germany takes new steps to tackle the energy crisis," *World Economic Forum*, August 24, 2022, January 12, 2023 Accessed, https://www.weforum.org/agenda/2022/08/energy-crisis-germany-europe.

53   *Ibid.*

54   MET Group, "When Will Fossil Fuels Run out?" *MET Group*, January 18, 2021, January 9, 2023 Accessed, https://group.met.com/en/mind-the-fyouture/mindthefyouture/when-will-fossil-fuels-run-out.

55   Jillian Ambrose, "Carbon Emissions from Fossil Fuels Could Fall by 2.5bn Tonnes in 2020," *The Guardian*, April 12, 2020, January 9, 2023 Accessed, https://www.theguardian.com/environment/2020/apr/12/global-carbon-emisions-could-fall-by-record-25bn-tonnes-in-2020.
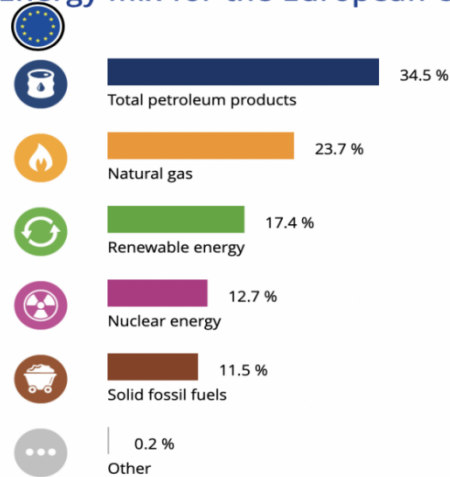
Figure 5 Energy Mix of the European Union[56]

Countries in the EU became highly dependent on fossil fuels during the course of industrialization. It is estimated that the EU generated 5.6 billion tonnes of carbon dioxide and accounted for 21 per cent of global energy use in 1990.[57][58] Recognition of the depletable nature and adverse effects of fossil fuels aroused an energy transition towards green and clean energy. In 2009, the European Union launched the Climate and Energy Package, aimed at reducing greenhouse gas emissions, increasing the proportion of renewable energy in overall energy consumption, and improving energy efficiency all by 20 per cent in 2020.[59] However, apart from EU's shrinking gas storage as the North Sea gas has depleted, the possibility of reaching such goals is also questioned concerning renewables' economic efficiency and the effectiveness of regulatory instruments.[60][61] Further, fossil fuels are deeply rooted in a wide range of industries, such as electricity generation and industrial production, and a rapid and clear-cut transition of the energy mix may induce widespread turbulences. Therefore, energy transition, regardless, needs a process.

b. Incompetence in Facilitating Energy Transition

The European Union is undoubtedly at a world-leading level in renewable energy development. For instance, in 2021, wind and solar power combined accounted for 10.3%

56   Eurostat, "Where Does Our Energy Come from?" *Eurostat*, January 10, 2023 Accessed, https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2a.html?lang=en.

57   Peter Vis and Jos Delbeke, "EU Climate Policy Explained," *European Union*, January 9, 2023 Accessed, https://climate.ec.europa.eu/system/files/2017-02/eu_climate_policy_explained_en.pdf.

58   Simon Evans, "Seven Charts Showing How the EU's Energy Use is Beiing Transformed," *CarbonBrief*, October 2, 2015, January 9, 2023 Accessed, https://www.carbonbrief.org/seven-charts-showing-how-the-eus-energy-use-is-being-transformed/.

59   European Commission, "2020 Climate & Energy Package," *European Commission*, January 9, 2023 Accessed, https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2020-climate-energy-package_en.

60   Christoph Bohringer and Andreas Keller, "Energy Security: An Impact Assessment of the EU Climate and Energy Package," *Copenhagen Consensus Center*, January 9, 2023 Accessed, https://www.copenhagenconsensus.com/sites/default/files/CCC_energy_surveyFINAL.pdf.

61   Catherine Clifford, "Why Europe is so Dependent on Russia for Natural Gas," *Consumer News and Business Channel*, February 24, 2022, January 9, 2023 Accessed, https://www.cnbc.com/2022/02/24/why-europe-depends-on-russia-for-natural-gas.html.

of global energy generation, while in 2018, wind energy alone managed to meet 14% of the EU's electricity demand.[6263] Despite all these, there are still many bumps in EU's highway of energy transition.

To begin with, renewable energy has its own limitations. For example, wind and solar power, which are considered the most important in low carbon transition, require vast quantities of land and material to operate.[64] At the same time, the generation of wind and solar power depend highly on the weather conditions, indicating the need for energy storage. There are also dispatchable sources from which power production can be actively controlled. Hydropower produces the largest share of renewable electricity in the world and the second largest in Europe, yet it is heavily dependent on geography.[6566] Other renewable energies, such as bioenergy, geothermal energy, and tidal energy, are developed at a relatively high expense.[67]

Having an accessible, reliable and affordable supply of renewable energy does not mean that energy transition is completed. Energies from these sources are often deployed along with electrification for storage, transportation, application, etc. As the power generated from renewables is introduced to the market, inadequate pricing mechanisms and rigid electricity-provision system may hinder a smooth, holistic and systematic transition.

In EU's scenario, problems with renewable energy presently lie threefold. There are still obstacles in the process of policy-making and administration of renewable energy's development. The policy focus is still primarily on short-term relieves such as more LNG imports from the US, the Middle East and Africa.[68] The procedures of approval are lengthy and inconsistent among Member States; at the same time, double competencies between government sectors and stalled replies are slowly depleting the chance to succeed in this race of time for energy transition. Oppositions from civil communities are also displayed against these top-down transition projects, as they are not fully engaged in the planning and ownership.[69]

In terms of funds and finance, an additional €210 billion are still needed to accomplish the goals of REPowerEU.[70] At present, aggravated by inflation and trapped in the rigidity of EU's current financing structure, the attainability and security of such funds remain questionable. As for Member States, producers of renewable technology favor the

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62   WindEurope, "Wind Energy in Europe in 2018," *WindEurope*, January 9, 2023 Accessed, https://windeurope.org/wp-content/uploads/files/about-wind/statistics/WindEurope-Annual-Statistics-2018.pdf.

63   Robert Rapier, "Wind and Solar Provided a Record 10% of World's Electricity Generation in 2021," *Forbes,* July 5, 2022, January 9, 2023 Accessed, https://www.forbes.com/sites/rrapier/2022/07/04/wind-and-solar-provided-a-record-10-of-the-worlds-power-in-2021/?sh=1fd2a97214aa.

64   IPCC, "Climate Change 2022: Mitigation of Climate Change, Summary for Policymakers," *Intergovernmental Panel on Climate Change*, January 9, 2023 Accessed, https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf.

65   IEA, "Electricity Production," *International Energy Agency*, January 9, 2023 Accessed, https://www.iea.org/reports/electricity-information-overview/electricity-production.

66   European Commission, "Hydropower," *European Commission*, January 9, 2023 Accessed, https://energy.ec.europa.eu/topics/renewable-energy/hydropower_en.

67   IPCC, "Climate Change 2022: Mitigation of Climate Change, Summary for Policymakers," *Intergovernmental Panel on Climate Change*, January 9, 2023 Accessed, https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf.

68   EEB, "Top 10 Problems for Renewable Energy in Europe," *European Environmental Bureau*, January 10, 2023 Accessed, https://eeb.org/wp-content/uploads/2022/05/Top-10-problems-for-renewable-energy-in-Europe.pdf.

69   *Ibid.*

70   Shan LI, "Europe's Energy Transition: Can Ambition Overcome Difficulties," *China Council for the Promotion of International Trade*, June 3, 2022, January 10, 2023 Accessed, https://www.ccpit.org/france/a/20220603/20220603damy.html.

western European markets such as those of France and Germany, making things difficult for countries like the Czech Republic to reach for energy supply.[71]

And finally, inadequacies of materials and a lack of installers also emerge in the process of implementing renewable policies.[72] Heat hump, a device used for heating by thermal technology, is crucial in helping families through the cold winter of 2022-2023 as a replacement for gas boilers. Nevertheless, its installers are largely understaffed across the EU, and it is affordable only in several EU countries, diminishing others' support for this renewable energy.[73]

c. Insufficient Coordination among Member States

The European Union is a supranational political and economic union of 27 Member States, each having its own geographical traits and energy trade backgrounds. The energy mix vary considerably among Member States. For example, petroleum products account for more than 80 per cent of the total energy available in Cyprus and Malta; gas makes up around 40 per cent of the energy mix in Italy and the Netherlands; and solid fossil fuels account for more than half in Estonia and more than 40 per cent in Poland.[74] Their distinct interests and needs may lead to very different attitudes towards the unified actions of the Union as a whole.

Policies within the EU's framework are greeted with varying degrees of acceptance. The "Recovery and Resilience Facility" is an initiative designed for recovery from the COVID-19 pandemic, offering a pool fund for countries. With a ceiling of 225 billion euros for each country, Italy applied for 191.5 billion, while Germany went for a mere 25.6 billion.[75] Similarly, countries often disagree with one another regarding collaborative actions as a Union.

Since the outbreak of the Russia-Ukraine Conflict, the European Union has imposed mass economic and political sanctions on Russia. In terms of energy, the EU-Russia trade of virtually all conventional energy sources, except for water, are placed under restrictions. In fact, none of these sanctions made by the EU were passed without fierce debates. On April 8, 2022, the EU imposed a ban on the purchase, import and transfer of coal from Russia, which was not executed until August 2022.[76] The original plan was for the sanction to be executed 3 months from its settlement, but it was extended to 4 months on the request of Germany and other countries. Germany, Poland, Italy and Netherlands

71   Aneta Zachova and Michal Hudec, "Green Technologies Shortage Looming in CEE," *Euractiv*, May 3, 2022, January 10, 2023 Accessed, https://www.euractiv.com/section/energy-environment/news/green-technologies-shortage-looming-in-cee/?utm_source=piano&utm_medium=email&utm_campaign=20769&pnespid=7uJoWTRNZf4fwv_QvW_rTp6K5guhRZltN_Tk3bFqswNmPhQSyngB5OYDJg32PbFsPxmo3iNREw.
72   EEB, "Top 10 Problems for Renewable Energy in Europe," *European Environmental Bureau*, January 10, 2023 Accessed, https://eeb.org/wp-content/uploads/2022/05/Top-10-problems-for-renewable-energy-in-Europe.pdf.
73   *Ibid.*
74   Eurostat, "Where Does Our Energy Come from?" *Eurostat*, January 10, 2023 Accessed, https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2a.html?lang=en.
75   Shan LI, "Europe's Energy Transition: Can Ambition Overcome Difficulties," *China Council for the Promotion of International Trade*, June 3, 2022, January 10, 2023 Accessed, https://www.ccpit.org/france/a/20220603/20220603damy.html.
76   Council of the EU, "EU Adopts Fifth Round of Sanctions against Russia over its Military Aggression against Ukraine," *European Council & Council of the European Union*, April 8, 2022, January 11, 2023 Accessed, https://www.consilium.europa.eu/en/press/press-releases/2022/04/08/eu-adopts-fifth-round-of-sanctions-against-russia-over-its-military-aggression-against-ukraine/.

opposed the sanction because are highly dependent imported coal from Russia, which amounts to more than 65 per cent of their overall coal imports.[77]

At the beginning of June, the EU adopted the sixth package of sanctions on Russia, including a ban on imports of crude oil and petroleum products. However, imports of crude oil by pipeline are not included due to the strong opposition from Hungary, Slovakia and Czechia, all of which are inland countries with special dependence on Russian supplies.[78] On December 3, the EU agreed on a price cap at $60 per barrel for Russian oil, which also underwent fierce arguments. There were two opposing groups: one led by Poland and the Baltic States, offering the number of $20-30, even lower than the cost of production, aiming for a quick defeat of Russia; the other led by Hungary, along with Germany, Austria and France, arguing that overly aggressive caps will burden the EU Member States and destabilize the global energy market. A price cap for gas is also on its way with two main camps in conflict: one with France, Italy and Spain in favor of the cap, the other with Germany and Netherlands worrying that the caps will frustrate possible gas suppliers.[79]

Possible Solutions

I. Macroscopic Measures to Curb Excessive Price

a. Market Correction Mechanisms

Last year saw an unprecedented peak in European gas prices. In August, the price soared to €300/MWh -up by 1000% compared to prices of last decades.[80] On November 2022, the European Commission proposed a Market Correction Mechanism to protect businesses and households from the impact of high gas prices.

The market correction mechanism is a supervision tool to limit extreme gas price spikes in the EU. It will be monitored by the Agency for Cooperation of Energy Regulators and published on their official website.[81] According to the Commission, the mechanism will

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77   Yu Du, "First Energy Sanctions! The European Union is Close to an Agreement, but a Total Ban on Russian Coal Could be Delayed until Mid-August," *WallStreetcn*, January 11, 2023 Accessed, https://www.hxny.com/nd-68290-0-17.html.

78   Council of the EU, "Russia's Aggression against Ukraine: EU Adopts Sixth Package of Sanctions," *European Council & Council of the European Union,* June 3, 2022, January 11, 2023 Accessed, https://www.consilium.europa.eu/en/press/press-releases/2022/06/03/russia-s-aggression-against-ukraine-eu-adopts-sixth-package-of-sanctions/.

79   Simone Tagliapitra, George Zachmann and Jeromin Zattelmeyer, "To Cap or Not to Cap: the Deal Europe Needs on Energy Prices," *Bruegel*, November 22, 2022, January 11, 2023 Accessed, https://www.bruegel.org/blog-post/cap-or-not-cap-deal-europe-needs-energy-prices.

80   European Council, "A market mechanism to limit excessive gas price spikes," *European Council*,December 20, 2022, January 22, 2023 Accessed, https://www.consilium.europa.eu/en/infographics/a-market-mechanism-to-limit-excessive-gas-price-spikes/#:~:text=What%20is%20the%20market%20correction%20mechanism%3F%20The%20market,of%20financial%20markets.%20How%20will%20the%20mechanism%20work%3F.

81   European Commission, "Action and measures on energy prices," *European Commission,* January 22, 2023 Accessed, https://energy.ec.europa.eu/topics/markets-and-consumers/action-and-measures-energy-prices_en#:~:text=Market%20Correction%20Mechanism%20On%202022%20November%202022%2C%20the,avoid%20disruption%20to%20the%20energy%20and%20financial%20markets.

be triggered when the "market correction event" occurs: (1) the month-ahead price on the Title Transfer Facility (TTF) exceeds 180€/MWh for three working days and (2) the month-ahead TTF price is 35€ higher than a reference price for liquid natural gas on global markets for the same three working days.[82] The mechanism helps ensure the energy supply's security and financial markets' stability.

As the market correction mechanism is about to take effect, risks remain hidden. The mechanism sets a cap for gas prices. However, if the actual gas price exceeds the artificially capped price of TTF, the transaction will be transferred out of the supervised space. This action of undermining market fairness would not only result in declined transparency, but will cause serious financial stability risks. Moreover, the correction mechanism is incompatible with the orderly-fair market principle, which means it poses too many obligations to main market participants. The price limit may lock the main market participants into obligation, as they could no longer have the opportunity to change their position. Under another circumstance, market participants tend to trade in the spot market to avoid risks when the mechanism is triggered.[83] This could put considerable pressure on spot prices while the security of the energy supply remains uncertain. Ultimately, any invasive intervention needs proper design and calculation, and rigorously tested to guarantee it does not negatively affect the market. However, it is unrealistic to assume that the market correction mechanism could become perfect within a short period, so there is a chance that the instrument will deliver further blows to Europe's depressed economy.

b. Coordination and Rearrangement of Supply and Demand

While the EU was able to withstand last winter, Member States are looking for safety measures to optimize energy resource distribution. To ensure the energy supply at affordable prices, EU members set up a platform for the common purchase of gas, liquid natural gas (LNG) and hydrogen. The joint purchase is a voluntary mechanism that fully uses the EU's collective political and market weight to support gas and hydrogen purchases. Five regional groups have already been created by EU countries within the platform. The mechanism is predicted to provide EU countries with sufficient gas supplies for the 2023-2024 winter.[84] Additionally, the joint purchase mechanism is crucial to avoid EU companies bidding for the same gas and rising prices.

In practice, EU gas companies and companies consuming gas submit their gas import needs. The total gas demand of EU countries has to cover at least 15 percent of their respective storage filling obligations. The aggregated demand will be calculated, and the EU will seek offers in the global market to meet the need. After that, companies could choose voluntarily to buy gas via the common RU purchasing platform. Besides, Member States clarified that Russian gas is excluded from the joint purchase.[85]

82 European Commission, "Commission proposes a new EU instrument to limit excessive gas price spikes," *European Commission*, November 22, 2022, January 22, 2023 Accessed, https://ec.europa.eu/commission/ presscorner/detail/en/ip_22_7065.

83 Christian Bae, "Letter on the proposed market correction mechanism," *Europex*, November 21, 2022, January 22, 2023 Accessed, https://www.europex.org/press-releases/letter-on-the-proposed-market-correction-mechanism/.

84 European Commission, "EU Energy Platform," *European Commission*, January 23, 2023 Accessed, https:// energy.ec.europa.eu/topics/energy-security/eu-energy-platform_en.

85 European Commission, "Energy Emergency - preparing, purchasing and protecting the EU together," *Eur-lex*, October 18, 2022, January 23, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/? uri=COM%3A2022%3A553%3AFIN&pk_campaign=preparatory&pk_source=EURLEX&pk_medium=TW&pk_ keyword=Energy&pk_content=Communication.

As joint purchase raises many political, legal and practical issues, experts are skeptical about its effectiveness in the current crisis. Researchers say that a looser "European solidarity mechanism" is a quicker and cheaper solution than the rushing endeavor like joint purchasing.[86] Additionally, the destination free of joint purchase mechanism is challenged. As many gas pipeline projects have been forced to suspend, voices say that even with the mechanism being carried out, regions in need still cannot get sufficient and affordable energy supply.

c. Optimizing Energy Consumption Patterns

As the EU struggles to become independent from Russian energy supply, energy saving and efficiency would naturally be put first. Increasing energy efficiency requires systematic methods. According to the REPowerEU plan, priorities should be given to digitalization and electrification.

Digitalization is proved to be the most rapid way of profiting when it comes to energy saving. Digital technologies have widely been applied to all energy end-use sectors. More and more residential and commercial buildings are equipped with intelligent energy management systems. They increase the potential energy efficiency by collecting and analyzing data, then use it to change the physical environment.

The electrification of heating in buildings is equally crucial, while the current European heating system is still heavily dependent on burning gas and oil. Above all, electrical devices have higher efficiency than those driven by fuel—an electric motor is three times more efficient than a gas-operated one. Researchers have found that with heat pumps and other technologies already available, the EU's electricity use for buildings heating could be increased from 7 percent to 90 percent.[87] However, domestic consumers and other end users are hesitating over the high costs of smart heat pump installation.

For households and citizens, REPowerEU plan encourages EU-wide energy saving. For example, turning down the thermostat for buildings' heating by 1 degree; solar rooftops front loading up to 15 TWh within a year.[88] The Commission also works with International Energy Agency (IEA) to instruct residents and businesses on steps to reduce their energy use and save money, which was predicted would save enough gas to heat nearly 20 million homes if adopted by all EU citizens.[89] The recommended steps involve reducing the heating and using air conditioners less, working online to avoid commuting, and taking public transport. Moreover, member-state governments could play their role by supporting solar panels installation, home insulation improvement and heating material switches to provide financial incentives.[90]

86   Christian Egenhofer, Irina Kustova, "Is joint EU gas purchasing really a bad idea," *Euractiv*, October 11, 2021, January 23, 2023 Accessed, https://www.euractiv.com/section/energy/opinion/is-joint-eu-gas-purchasing-really-a-bad-idea/.

87   Philippe Delorme, "How energy efficiency can break Europe's gas addiction," *World Economic Forum*, July 8, 2022, January 22, 2023 Accessed, https://www.weforum.org/agenda/2022/07/how-energy-efficiency-can-break-europe-s-gas-addiction/.

88   European Commission, "REPowerEU: Joint European Action for more affordable, secure and sustainable energy," *Eur-lex*, August 3, 2022, January 22, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A108%3AFIN.

89   International Energy Agency, "Energy saving actions by EU citizens could save enough oil to fill 120 super tankers and enough natural gas to heat 20 million homes," *IEA*, April 21, 2022, January 22, 2023 Accessed, https://www.iea.org/news/energy-saving-actions-by-eu-citizens-could-save-enough-oil-to-fill-120-super-tankers-and-enough-natural-gas-to-heat-20-million-homes.

90   International Energy Agency, "Energy saving actions by EU citizens could save enough oil to fill 120 super tankers and enough natural gas to heat 20 million homes," *IEA*, April 21, 2022, January 22, 2023 Accessed, https://www.iea.org/news/energy-saving-actions-by-eu-citizens-could-save-enough-oil-to-fill-120-super-tankers-and-enough-natural-gas-to-heat-20-million-homes.

II. Enhancing Sustainability of Energy System

A sustainable energy system can guarantee a reliable and lasting energy supply without undermining the integrity and sustainability of the natural system. Multi-dimensional approaches are required, from meeting the prerequisites of renewable development and smoothing the process of upgrading the energy system to securing stable and satisfactory developmental and environmental results.

a. Accelerating the Development of Renewable Energy

It is believed that renewables-based decarbonisation is key for both climate neutrality and energy security.[91] To draw a distinction between renewable energy and fossil fuels, the latter, such as oil, gas and coal, take millions of years to form, are distributed unevenly and generate greenhouse gas when burned. On the other hand, renewable energy such as solar, geothermal and tidal energy, are of instant reach, are spread generously around the globe and release far less carbon dioxide when applied for energy generation. Most importantly, renewables can be replenished on a human timescale, therefore being "unlimited" to a certain degree. The European Union, bathing in the Sun and enjoying the fruits of ancestors' plow, is both geographically adequate and technologically capable of forwarding its path on renewable energy's development.
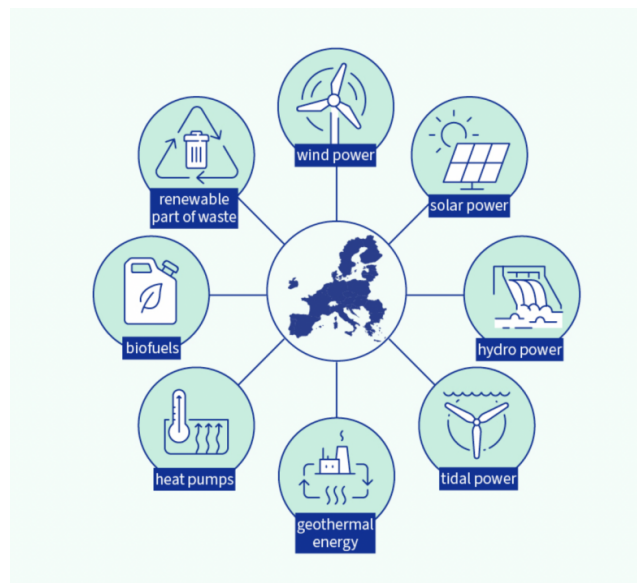
Figure 6 EU's Renewable Energy Sources[92]

The European Union takes the reduction in Russian energy imports as a chance to upgrade its energy system and a catalyst for reaching its climate neutrality goal in 2050. To guarantee a well-balanced development, policies are made, and goals are set. Renewable energies are expected to take up at least 40 percent of EU's energy market in 2030.[93] In terms of advancement in technology, enhancing cooperation between business

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91   WindEurope, "Europe Puts Fast Permitting of Renewables at the Heart of Its Energy Security Plan," *EURACTIV*, May. 18, 2022, January. 17, 2023 Accessed, http://pr.euractiv.com/pr/europe-puts-fast-permitting-renewables-heart-its-energy-security-plan-233570

92   Council of the EU, "Infographic − Fit for 55: How the EU Plans to Boost Renewable Energy," *European Council & Council of the European Union*, February. 8, 2023 Accessed, https://www.consilium.europa.eu/en/infographics/fit-for-55-how-the-eu-plans-to-boost-renewable-energy/.

93   Council of the EU, "'Fit for 55': Council Agrees on Higher Targets for Renewables and Energy Efficiency," *European Council & Council of the European Union*, June. 27, 2022, January.17, 2023 Accessed, https://www.consilium.europa.eu/en/press/press-releases/2022/06/27/fit-for-55-council-agrees-on-higher-targets-for-renewables-and-energy-efficiency/.

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and science, boosting knowledge-sharing and increasing incentives of innovation in all sizes of enterprises are stressed.[94] Further, the REPowerEU Action Plan recognizes the need for "drastically accelerating" permission of renewable sources while keeping existing deadlines to optimize administrative processes.[9596] Among numerous types of renewable sources, exceptional emphases are placed on solar energy, hydrogen and offshore energy sources.[97] Solar energy is regarded as the key to the integration of energy systems because of its abundant and cost-competitive nature. Meanwhile, hydrogen is seen as the energy carrier of the future, decarbonizing high-emitting sectors. Not to mention that the EU is experienced in being "first movers" in wind energy. Strategies have been set forth to encourage progress in renewables, including the European Solar Rooftops Initiative, which forwards the installation of solar panels, and Green Hydrogen Partnerships, which promotes renewable hydrogen production and trade.

b. Promoting Well-Balanced Green Transition

Green Transition is a necessity given the EU's ambitious goals of reducing the progress of climate change and environmental degradation. European Green Deal is designed as Europe's new growth strategy to transform EU into a modern, resource-efficient and competitive economy. Energy is like the driving gear in the dial, with lots of gears attached to and driven by it. To change it, even a nuance, would have considerable and extensive influences on other gears and the entire machine. Therefore, during the process of energy transition, careful consideration must be laid on both the energy mix and other related factors.

The clean transition of energy, with the aim of being more environmentally friendly, is often the emphasis of energy transition. The sufficiency of renewables, stability and flexibility of the entire energy mix are all crucial to a successful transition. The European Green Deal, therefore, focuses on three key sectors in terms of clean energy transition: a secure and affordable EU energy supply; energy efficiency, energy performance of buildings and renewables in power sectors; and a fully integrated, interconnected and digitalized energy market.[98] Market regulatory mechanisms are crucial because the deployment of renewables is costly, especially in early stages when setting up infrastructures. It takes time for the economic and environmental benefits created by using renewable sources to compensate for the initial investment, during which burdens on the economy slowly accumulate.

Private sectors are expected to play a fundamental part in financing the green transition under instructions of the governments. Member states are responsible for reorienting public and private demand for more sustainable goods. At the same time, governments offer a consistent and innovative regulatory framework, within which methods include

94   European Commission, "Technical Support for Implementing the European Green Deal," *European Commission*, January. 17, 2023 Accessed, https://reform-support.ec.europa.eu/system/files/2021-03/2020.2329-final-web.pdf.

95   WindEurope, "Europe Puts Fast Permitting of Renewables at the Heart of Its Energy Security Plan," *EURACTIV*, May. 18, 2022, January. 17, 2023 Accessed, http://pr.euractiv.com/pr/europe-puts-fast-permitting-renewables-heart-its-energy-security-plan-233570.

96   European Commission, "REPowerEU with Clean Energy," *European Commission*, May. 18, 2022, January. 17, 2023 Accessed, https://ec.europa.eu/commission/presscorner/detail/en/fs_22_3138.

97   Council of the EU, "Clean Energy," *European Council & Council of the European Union*, January.17, 2023 Accessed, https://www.consilium.europa.eu/en/policies/clean-energy/.

98   European Commission, "Energy and the Green Deal," *European Commission,* January. 18, 2023 Accessed, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/energy-and-green-deal_en.

green taxation, green budgeting and strengthening public investments.[99] In addition to advancement in renewable energy, short-term relieves target at fossil fuels' are proposed alongside, ensuring flexibility of the energy system.[100] On a boarder scale, a circular economy is to be established, encouraging sustainable consumption and preventing waste.

c. Long-Term Planning for Infrastructure Building

A sustainable and flexible energy system can only be guaranteed by well-grounded energy generation and transition infrastructure both at home and abroad. To that end, EU has launched a few strategies and institutions. Trans-European Network for Energy (TEN-E) revised recently on June 23, 2022, for example, aims to strengthen the interconnection of Member States' cross-border energy infrastructure while enlarging energy infrastructure categories and promoting gas grid development.[101] Regarding specific renewable sources, EU Solar Energy Strategy plans to bring online over 320 GW of solar photovoltaic by 2025, exceeding twice of today's level.[102] WindEurope advocates simplifying permitting and offers a comprehensive guide for wind industry expansion, including site selection, administration, auction design, grid connection and legal challenges.[103]

Meanwhile, international cooperation is strengthened with the hope of building mutually beneficial and lasting partnerships. Ships for liquified natural gas (LNG) deliveries, essential for immediate and flexible gas import, are sailing from the US, Canada, Egypt, Israel, etc., to the European Union.[104] Pipelines transporting oil and natural gas are to be built between Norway and EU, promoting long-term planning in an efficient and reliable project with a partner in the same continent.[105] For example, the 900-kilometer Baltic Gas pipeline, which will transport gas from Norway to Poland, was put into operation on October 1, 2022, and was designed to transport up to 10 billion cubic meters of gas per year.[106]

99   European Commission, "Green Transition," *European Commission*, January. 18, 2023 Accessed, https://reform-support.ec.europa.eu/what-we-do/green-transition_en.

100   EEB, "Top 10 Problems for Renewable Energy in Europe," *European Environmental Bureau*, January. 10, 2023 Accessed, https://eeb.org/wp-content/uploads/2022/05/Top-10-problems-for-renewable-energy-in-Europe.pdf.

101   Council of the EU, "TEN-E: Council Gives Green Light to New Rules for Cross-Border Energy Infrastructure," *European Council & Council of the European Union*, May. 16, 2022, January.18, 2023 Accessed, https://www.consilium.europa.eu/en/press/press-releases/2022/05/16/ten-e-council-gives-green-light-to-new-rules-for-cross-border-energy-infrastructure/.

102   European Commission, "Technical Support for Implementing the European Green Deal," *European Commission*, January. 17, 2023 Accessed, https://reform-support.ec.europa.eu/system/files/2021-03/2020.2329-final-web.pdf.

103   WindEurope, "How to Simplify Permitting," *WindEurope*, May. 18, 2023, January. 18, 2022 Accessed, https://windeurope.org/intelligence-platform/product/how-to-simplify-permitting/?_cldee=zgBvU0KEW0-Lq-pU8HLYeErZp2eqIDDa7WN67WF1SsRjzf_8dAjCCqnLbd0FbD5u&recipientid=contact-133d34368b38ec118c646045bd86f253-47108f93da8042c48450c99f09b9cd21&esid=353d1fa5-a4d6-ec11-a7b5-000d3a45a751.

104   European Commission, "REPowerEU: Affordable, Secure and Sustainable Energy for Europe," *European Commission*, January. 18, 2023 Accessed, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en.

105   European Commission, "Joint EU-Norway Statement on Strengthening Energy Cooperation," *European Commission*, June. 23, 2022, January. 18, 2023 Accessed, https://ec.europa.eu/commission/presscorner/detail/en/statement_22_3975.presscorner/detail/en/statement_22_3975.

106   ViewChina, "The Baltic Sea Pipeline Has Become a New Hope for Europe," *Huxiu*, October. 24, 2022, February. 8, 2023 Accessed, https://m.huxiu.com/article/693402.html.

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d. Improving Regional Coordination and Solidarity

Publilius Syrus once said where there is unity, there is always victory. Countries of the European Union, each with their own characteristics, can explore great potentials and create synergy. Inflows of energy sources into the EU energy market include, prominently, renewable from Germany, nuclear from France, coal from Poland, etc. In times of unsecured external supply, EU countries need to collaborate to maintain a stabilized regional supply-demand chain and to form collective measures as a Union.

To promote closer cooperation among EU countries, Renewable Energy Financing Mechanism (REFM) was launched.[107] Market mechanisms are introduced in that tender and selections are applied to renewable projects proposed. Contributing countries winning the bid can finance projects that are more cost-effective in their own territory and receive renewable energy production absent or scarce domestically. Host countries, on the other hand, may enjoy additional local investment and progress in renewables development. Through a fair, efficient and self-regulating system, resources are effectively utilized, revitalizing the entire market with agreeable outcomes. In addition to financing mechanisms, a strengthened energy network is being constructed among EU Member States laying the groundwork for regional solidarity. A Green Energy Corridor is founded between France and Iberian Peninsula, transporting gas and renewable energy sources.[108] A Baltic gas pipeline is built from Norway to Poland, mobilizing resources towards energy self-sufficiency in EU.[109]

Actions of the European Union need to be customized for Member States to reach consensus and implement. Whether it be energy policies (REPowerEU), climate goals (Paris Agreement Compatible, PAC), or long-term strategies (National Energy and Climate Plans, NECP), "country-specific" is predominant.[110][111][112] For example, during the process of Just Transition, a part of the European Green Deal, it is recognized that countries dependent on fossil fuels will undergo profound economic, environmental and social changes. Therefore, EU is offering targeted support for assessing, planning and implementing countries' catered Just Transition goals, promoting localization of consolidated acts of the European Union.

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107   European Commission, "EU Renewable Energy Financing Mechanism," *European Commission*, January. 19, 2023 Accessed, https://energy.ec.europa.eu/topics/renewable-energy/financing/eu-renewable-energy-financing-mechanism_en.
108   Yang Zhao and Wei Wang, "Consensus Cannot Hide Differences, The EU Energy Crisis Remains Unsolved," *China Economic*, October. 31, 2022, January. 19, 2023 Accessed, http://intl.ce.cn/sjjj/qy/202210/31/t20221031_38200495.shtml.
109   Ying Fang and Hong Qin, "New Gas Pipeline Arrives! Crucial to Europe," *Shanghai Observer*, September. 28, 2022, January. 19, 2023 Accessed, https://export.shobserver.com/baijiahao/html/532854.html.
110   European Commission, "Technical Support for Implementing the European Green Deal," *European Commission*, January. 17, 2023 Accessed, https://reform-support.ec.europa.eu/system/files/2021-03/2020.2329-final-web.pdf.
111   CAN, "Energy Transition Vision," Climate Action Network, January. 19, 2023 Accessed, https://caneurope.org/energy-transition/.
112   European Commission, "National Energy and Climate Plans," *European Commission*, January. 19, 2023 Accessed, https://energy.ec.europa.eu/topics/energy-strategy/national-energy-and-climate-plans-necps_en.

Topic B: Digitalization of Management and Re-settlement of Inflowing Refugees

Current Situation

I. Overview of Current Situation

a. Inflow of Refugees under Russia-Ukraine Conflict

An ongoing refugee crisis started in Europe in late February 2022 after the Russia-Ukraine Conflict broke out. It is reported to be the largest refugee crisis in Europe since the second World War. According to the UNHCR, there are 6.3 million Ukrainians entering neighboring countries by January 2023, along with 6.6 million people being internally displaced and 13 million people being trapped in affected areas.[113] Due to the continuous turmoil inside Ukraine, a large number of displaced persons will be stranded in their host countries in the coming years.

The Temporary Protection Directive was activated by the European Commission to assist the mass inflow of Ukraine refugees, but the implementation of these measures was met with difficulties. Some local governments simplified their refugee acceptance procedures with the aim of reducing pressure on the borders, but these have led to indefinite division of responsibilities among Member States, as well as challenges for the subsequent refugee governance. Many countries in the EU suffered from a severe mismatch between their host capacities and the actual number of inflowing refugees. Turbulence occurs frequently at the EU's internal borders, with armed conflicts, pandemic, and criminal activities deteriorating the situation.

Furthermore, the settlement of refugees within EU countries brings mutual pressures for both the host country and the refugees. On the one hand, the excessive number of refugees are a burden on the economy of their host countries, especially considering the intensive housing and employment competition between refugees and local residents. Many host countries are now entering an "exhausted period", growing more and more reluctant to accommodate the constant inflow of Ukraine refugees. On the other hand, due to the insufficient data management, the refugees' increasing demands in housing, education, employment, and medical treatment are inadequately assessed, identified, and attended to.

However, there are substantial differences between Ukrainian refugees in this new tide of refugee crisis and the traditional refugees coming from Africa and the Middle East, which

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113   UNHCR, "Ukraine Emergency," *the UN refugee agency*, January 18, 2023 Accessed, https://www.unrefugees.org/emergencies/ukraine/.

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makes it necessary for the EU to update its refugee management system and adjust it to the current crisis. At present, the European Union have been occasionally criticized to exhibit a "double standard" in the face of refugees of different origins. According to the criticism, European countries are more willing to accept Ukrainian refugees, not only out of their political stances (namely "standing with Ukraine"), but also because of their shared "democratic ideologies". What was brought out in stark contrast was European countries' negative attitude in accepting refugees coming from across the Mediterranean Sea.

Another difference lies in the level of digitalization of these refugees. Most Ukrainian refugees came from relatively developed regions with a higher level of digitalization, where the population was more adapted to a digital environment and familiar with the use of smart facilities. Traditional refugees in Europe, however, enjoy a lower proportion of digital capacity. The digital gap among refugees contributed to the demand for different services and governance models.

b. Digitalization Progress in Europe

Europe enjoys a high ranking in digitalization levels among other continents. Over the last seven years, 1.5 billion euros from EU funds were dedicated to digitalization. On 8 December 2022, the Council of the European Union adopted the "Path to the Digital Decade" programme which establishes targets for the EU digital transformation that its Member States anticipate to be achieved by 2030. Faced with this unprecedented tide of the refugee crisis at present, European countries tend to solve the problem through digitalization to make the whole system more resilient and sustainable. In this context, considerable efforts have been made to optimize refugee management systems with digital technology, including popularizing bloc-wide ID among civilians, developing digital platforms to ensure living quality (such as eHealth,) and striving to complete the biometric identification systems that involve fingerprint identification and facial recognition.

Nevertheless, difficulties in digital access, coordination between Member States, database building, and data protection are hindering the digitalization process. Given the strong digital capacity and the profound refugee-management experiences, the European Union anticipate a larger extent of solidarity to come up with better digital solutions to the ongoing refugee crisis.

II. Past Efforts

a. International Efforts

By the end of 2022, the number of people forcibly displaced by war, violence and persecution in the world had reached 89.3 million. Among the displaced persons, 27.1 million were refugees, with Ukrainian refugees accounting for 40%.[114] It is estimated that 12 million people fleeing from the Russia-Ukraine Conflict would need relief and protection.

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114   UNHCR, "situations in Ukraine", *UNHCR*, October.10, 2022, January.10, 2023 Accessed, https://data.unhcr.org/en/situations/ukraine.

Over the years, UNHCR has placed increased emphasis on the use of digital identification in protecting people of concern, including refugees, asylum seekers, internally displaced persons, returnees and stateless persons.[115] UNHCR's current global identification infrastructure is built on legacy systems developed by field operations, with the first digital identification management system introduced in the aftermath of the 1999 Kosovo crisis. UNHCR built on these initiatives and established the Digital Population Registration and Identity Management Ecosystem (PRIMES) in order to improve its system of refugee management, and thereby offer better protection and assistance to refugees. PRIMES comprises of several repositories for personal data (biographic and biometric) and supporting information, along with multiple safe tools for data analysis to facilitate targeted protection, assistance, and solutions to refugees and other displaced persons. PRIMES was designed with due consideration on the interoperability, so that governments can utilize the shared data and technology to better deliver services in a safe and secure manner. PRIMES is fully aligned with the Policy on the Protection of Personal Data of Persons of Concern to UNHCR.

Efforts on the national level also deserve special attention. From January 24 to November 20, 2022, the United States provided around 47.8 billion euros in bilateral financial, humanitarian, and military aid to Ukraine. The United Kingdom also adopted an emergency asylum policy for Ukrainian refugees. After Brexit, although the UK has withdrawn from the Schengen Treaty and ended the freedom of movement with the EU on December 31, 2020, it has still established a new border and immigration system to better manage the flowing refugees.[116] However, the large scale of Ukrainian refugees is bound to bring considerable impact on the British refugee governance.

b. Efforts within the EU

In March 2022, the EU activated the *Temporary Protection Directive*. This EU Directive was adopted in 2001, in the aftermath of the mass displacement in Europe due to the armed conflicts in the Western Balkans, in particular from Bosnia and Herzegovina and Kosovo. It is an EU emergency scheme activated only in exceptional circumstances (such as mass influxes of refugees) to provide immediate and collective protection to displaced persons and reduce pressure on the national asylum systems of EU countries.

The specially-granted rights and services under the temporary protection scheme include a residence permit, access to the labour market and housing, medical assistance, and access to education for children. Upon the act, Ukrainian nationals are admitted into the EU territory as visa-free travelers. They are allowed to move freely for a 90-day period, and choose one EU country where they would like to enjoy the temporary protection rights. The temporary protection will last for at least one year (until 4 March 2023) up to three years depending on the situation in their home countries. [117]

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115   UNHCR, "From proGres to PRIMES", *United Nations High Commissioner for Refugees*, March 16, 2018, January 11, 2023 Accessed, https://www.unhcr.org/blogs/wp-content/uploads/sites/48/2018/03/2018-03-16-PRIMES-Flyer.pdf.

116   UK Immigration Home Office, "Apply for a Ukraine Family Scheme visa", *UK Visas and Immigration and Home Office*, May. 13, 2022, December. 26, 2022 Accessed, https://www.gov.uk/guidance/apply-for-a-ukraine-family-scheme-visa#full-publication-update-history.

117   European Council, "How the EU manages migration flows," *European Counci*l, May 5, 2022, January 1, 2023 Accessed, https://www.consilium.europa.eu/en/policies/eu-migration-policy/managing-migration-flows/.

The temporary protection scheme applies to the following personnel if they resided in Ukraine before or on 24 February 2022: Ukrainian nationals and their family members; non-Ukrainian nationals and stateless persons benefiting from international protection in Ukraine (e.g. refugees and beneficiaries of subsidiary protection) and their family members; and non-Ukrainian nationals with a permanent residence permit who cannot return to their country of origin in safe and durable conditions (adequate national protection can also apply).[118] The Directive may also apply to people in special circumstances, including: Ukrainian nationals who fled Ukraine not long before 24 February; Ukrainian nationals who found themselves within the EU territory just before 24 February (e.g. for holiday or work purposes); and Non-Ukrainian nationals with a non-permanent residence permit who cannot return to their country of origin in safe and durable conditions.

In terms of humanitarian aid, the EU has allocated 500 million euros of its budget to address the humanitarian crisis caused by the Conflict. Meanwhile, 27 Member States provided more than 100 million Euros worth of goods through the EU civil protection mechanism. In terms of border control, the European Commission has issued guidelines to help border guards effectively manage people arriving at the Ukrainian border, reduce waiting times for entry and ensure personnel safety. The EU has also contributed emergency kits, protective clothing, disinfectants, tents, fire-fighting equipment, generators and water pumps to Ukraine through the civil protection mechanism, providing 107 million pieces of in-kind assistance. [119]

Problems to be Solved

I. Limitations of Temporary Protection

On March 4, 2022, the EU activated the Temporary Protection Directive (2001/55EC) to provide immediate and collective protection for displaced persons from Ukraine.[120] According to the provisions under the Directive, Ukrainian refugees are allowed to apply for temporary protection in any EU member state. Successful applicants will be granted a temporary residence permit and access to employment, health care, education and other social benefits. Nevertheless, the incomplete registration and documents of refugees crossing the border, as well as the absence of subsequent tracking and monitoring for refugees within the EU territory, has made it increasingly difficult for governments of the host countries to effectively manage their inflowing population.

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118   European Council, "How the EU manages migration flows," *European Council*, May 5, 2022, January 1, 2023 Accessed, https://www.consilium.europa.eu/en/policies/eu-migration-policy/managing-migration-flows/.

119   European Commission, "Information for people fleeing the war in Ukraine," *European Commission*, June 3, 2022, January 15, 2023 Accessed, https://eu-solidarity-ukraine.ec.europa.eu/information-people-fleeing-war-ukraine_en.

120   European Union, "Council Implementing Decision (EU) 2022/382," *Official Journal of the European Union,* March 4, 2022, December 26, 2022 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022D0382.

a. Incomplete Registration and Documentation

From February 24 to July 19, 2022, about 3.71 million Ukrainian refugees were granted temporary protection in the EU countries.[121] The Temporary Protection Directive aims to increase the efficiency of refugee acceptance, but overemphasis on efficiency would lead to a degree of negligence on the comprehensiveness of information management as well as border security. At the initial stage and in face with the mass influx of Ukrainian refugees, many EU countries chose to loosen their control on external and internal borders and accept refugees without adequate registration and documentation. In order to accelerate the process of refugees acceptance, border countries like Poland only registered the identities of refugees, but conducted no verification of their identities. The incomplete collection and storage of critical information has brought underlying barriers for future plannings and refugee governance. Furthermore, the inadequate verification inevitably means a higher risk of identity frauds and stowaways. A loosened border control may also cause an increase in the crime rate at borders. Ukrainian women and children are faced with growing threats from human traffickers, sexual predators, and kidnappers, who may take advantage of the regulation loopholes and conduct criminal activities without being identified.[122]

b. Absence of Subsequent Tracking and Monitoring

Many Ukrainian refugees subjectively refused to cooperate in the information registration at EU borders, and there are two reasons leading to this phenomenon. The first factor is their preference or intention to return to their homeland in the near future. Acceptance of registration would mean that refugees cannot return to Ukraine within three months, which ran counter to the expectations of some Ukrainians. And the second factor is the free-flow incentives: Ukrainian refugees prefer to move to EU countries as free-flow residents, which would allow them to be accepted by more developed countries within the EU.

The difficulty of identifying the nationality status of Ukrainian refugees increased the barriers against refugees tracking and monitoring. In early December, 2021, President Volodymyr Zelenskyy introduced a "dual citizenship" for Ukrainians living abroad. His proposal aimed to improve Ukraine's demography and to hedge against the adverse influence of Russia and Hungary, who were believed by Ukraine to have been interfering with their domestic affairs by issuing passports to ethnic Ukrainians. However, the amendment to the law was not passed, meaning that dual citizenship remains illegal in Ukraine. By contrast, from April 2019 to the outbreak of the Conflict, President Vladimir Putin signed three presidential decrees simplifying the naturalization process (which allows dual citizenship), extending the coverage of naturalization to all of Ukraine.[123]Some Ukrainian Jews hold Israeli citizenship, while some oligarchs hold passports from multiple countries. Although these people are settled in Ukraine, they are no longer citizens of Ukraine under the current law. This further complicates the process of tracking and monitoring.

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121   Bower, "2.5 Million Ukrainian Refugees Have Returned to Ukraine Since the Beginning of War", *War Journal*, June 10, 2022, December 26, 2022 Accessed, https://www.schengenvisainfo.com/.

122   Patrick Reilly, "Ukrainian refugees face threat of human trafficking at borders," *New York Post,* April 2, 2022, February 10, 2023 Accessed, https://nypost.com/2022/04/02/ukrainian-refugees-face-threat-of-human-trafficking-at-borders/.

123   Krzysztof Nieczypor, Andrzej Sadecki, "Ukrainian-Hungarian dispute over dual citizenship," *Political Review* 34, no.5(2022): 23.

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c. Loosened Crime Prevention at Borders

As is previously mentioned, human trafficking has become a complex challenge for Ukrainian refugees on their way into neighbouring countries[124] On the one hand, the unstable situation of the refugee population structure intensifies the materialized attribute of refugees. The Medica refugee camp on the Polish border counts more than five large traffickers and 200 suspects on the run across the border. Police are working overnight.[125] On the another hand, according to the Organisation for Security and Co-operation in Europe (OSCE) report on Trafficking in Persons, sexual exploitation is the most common form of trafficking in EU Member States, with nearly three quarters of victims being women and nearly one quarter children. The statistics from search engines showed that webpage searches for sex workers from Ukraine spiked by 600 percent shortly after the outbreak of special military operations.[126] It is estimated that one in five refugee women and girls may experience sexual violence in places such as camps and shelters.[127]

II. Deficiencies of Digitalized Management

The inflow of Ukrainian refugees exacerbated the long-standing refugee management dilemma among EU Member States, and digitalization has provided a new solution to refugee management. Still, there are many problems with digitalized management itself, which lies in multiple aspects such as application, popularization, risk assessment and many other.

a. Insufficient or Underutilized Data and Technologies

It is estimated that at least 12 million Ukrainian residents have fled their home due to the Russia-Ukraine Conflict, among which more than 5 million had left for neighboring countries by July 2022.[128] The enormous number indicates the need for a more comprehensive and exhaustive data collection, together with more efficient data sharing to facilitate appropriate humanitarian actions. However, it can be observed from the table below that many data regarding border crossings remain uncollected or unpublished, raising questions on the reasonable division of responsibility for refugee management.

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124   Suzanne Hoff, Eefje de Volder,"4 million refugees hit Europe, Ukrainian women are clearly marked, and the EU may face infighting in the future," *Military Base,* June 15, 2022, December 31, 2022 Accessed, https://inf.news/ne/military/ba4fa23857964398c57863c07409c8e5.html.
125   *Ibid.*
126   Chen Reis, "Ukrainian female refugees are fleeing a war, but in some cases more violence awaits them where they find shelter," *The War Conversation*, March 28, 2022, December 31, 2022 Accessed, https://theconver sation.com/.
127   Suzanne Hoff, Eefje de Volder, "Preventing human trafficking of refugees from Ukraine," *La Strada International & The Freedom Fund*, May 2022, December 31, 2022 Accessed, https://freedomfund.org/wp-content/uploads/UkraineAntiTraffickingReport_2022_05_10.pdf.
128   BBC News, "How many Ukrainian refugees are there and where have they gone," *BBC News*, July 4, 2022, January 8, 2023 Accessed, https://www.bbc.com/news/world-60555472.

Countries featured in the Refugee Response Plan

Country	Data Date	Refugees from Ukraine registered for Temporary Protection or similar national protection schemes	Refugees from Ukraine recorded in country	Border crossings from Ukraine*	Border crossings to Ukraine**
Bulgaria	2022/12/13	148,451	51,140	Not applicable	Not applicable
Czech Republic	2022/12/23	473,736	474,731	Not applicable	Not applicable
Hungary	2022/12/27	33,218	33,218	1,972,885	Data not available
Poland	2022/12/26	1,546,354	1,546,354	8,506,801	6,409,829
Republic of Moldova	2022/12/27	Not applicable	100,494	732,939	367,332
Romania	2022/12/25	102,039	106,629	1,737,719	1,386,384
Slovakia	2022/12/27	105,124	105,370	1,047,890	788,941
总计		2,408,922	2,417,936	13,998,234	8,952,486

Figure 7 Countries featured in the Refugee Response Plan[129]

Many EU Member States enjoy world-leading status in terms of technical capacities and digital competitiveness. According to International Institute for Management Development (IMD) in 2022, among the top 10 countries in the World Digital Competitiveness ranking, five of them (Denmark, Sweden, Switzerland, Netherlands and Finland) were from the EU. [130] Considered to be easily affected by digital divide and fragile safeguards, the existing digitalization used in humanitarian sector is of limited scale, and digital approaches are inadequate in the face of the current refugee crisis. While the EU is striving to apply digital technologies in refugee services, enormous challenges like imbalanced digital capacity, partial privacy protection and insufficient digital tools need to be tackled.

b. Lack of Access to Digital Facilities

Accessibility of digital facilities (e.g. smartphones and other digital devices) is fundamental for both the collection of data and the provision of everyday services, especially for the Ukrainian refugees temporarily residing in EU countries. Besides that, stable technical and social circumstances that guarantees the normal operation of digital device are equally imperative to refugees.

What is more, there has been a shortage of digital services to guarantee the quality of life for refugees in receiving countries. Problems also occur with the connection of digital services between Ukraine and the host countries, bringing much inconvenience to refugees' integration and adaptation to the local society. Currently, less than 1/3 of Ukrainian refugees are temporarily employed in the host country, and many still need assistance finding accommodation. There are multiple barriers if Ukrainian refugees wish to start their lives anew in the EU countries, since they have limited access to recover their past identity and financial information, such as bank accounts and credit history. In pursuit of better regulation and management, more comprehensive digital services need to be improved.

c. Privacy Infringement and Data Abuse

Digitalized management is a complicated process, and the negligence on any link could jeopardize the entire chain of privacy protection. At present, compulsory documentation is applied as the primary means of data collections for refugees. In the laws of Germany,

129   UNHCR, "Refugee Response Plan," *Office of the United Nations High Commissioner*, January 8, 2023 Accessed, https://www.unhcr.org/refugee-response-plans.html.
130   Statista, "Country-level digital competitiveness rankings worldwide as of 2022," *Statista*, January 8, 2023 Accessed, https://www.statista.com/statistics/1042743/worldwide-digital-competitiveness-rankings-by-country/.

the United Kingdom and some other European countries, confiscation of mobile phones of asylum seekers is permitted. The UNHCR has also justified biometric data collection to extract information during humanitarian aid.[131]

In terms of data security, more advanced methods are needed to manage the storage and preservation of refugee information. The military confrontation between Russia and Ukraine came along with mass cyberattacks from both sides, and the security of databases was placed under severe threats, including information leak, data abuse, privacy infringement. Moreover, sharing of information among Member States and other organizations is vital to the efficient provision of humanitarian aid materials.

Once the collected data is put into concrete use, there are also concerns about the balance between transparency and privacy protection. At the present stage, there are no standards to define or specify the required degree of personal information; nor is there adequate provisions on the conditions for disclosure or publicity of the specific types of information.[132]

Possible Solutions

I. Accelerating Digitalization of Refugee Management

a. Collaboration on Refugee Documentation

Digital transition is key to the EU Member States' collaboration on refugee documentation. Seeking consensus on cooperative implementation is equally important for countries to build information-collection channels together and carry out refugee documentation on a larger scale. This, in turn, will be the basis for a more credible data analysis and rational policy-making on refugee services and management. One case in point is the update of Diia, an application marking the cornerstone of endowing all Ukrainians with a digital ID. The EU countries have utilized this platform to collect digital information of refugees that are permitted to apply for residence via digital documents. However, such collaborative channels currently finds limited acceptance, and the collected data have not been put into full use.

Concerning the barriers to effective refugee management and resettlement, substantial data collection is the precondition for subsequent procedures. Collaborative documentation is an essential appeal because it could facilitate route tracing and search for missing persons during the unregulated migration process. In the long term, it also raises countries' competence an preparedness for the potential problems that might occur when the Temporary Protection Directive expires.

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131   Amy Irvine, Concordia Intern, "Data Collection on Refugees: more Harm than Good?" *Concordia*, April 26, 2021, January 8, 2023 Accessed, https://www.concordia.net/newsroom/blog/data-collection-on-refugees-more-harm-than-good/.
132   ICRC, "Handbook on Data Protection In Humanitarian Action," *International Committee of the Red Cross*, January 7, 2023 Accessed, https://rm.coe.int/090000168076662a.

b. Information Sharing and Database Building

The Migration Preparedness and Crisis Blueprint published by the EU in 2020 proposed to establish a unified network to ensure adequate information exchange. [133]However, even under the current legal basis, databases on the national scale are still the primary tool for refugee management for lack of an EU-scale comprehensive IT system available.[134]

In the hope of augmenting efficient implementation of the Temporary Protection Directive, the European Council established the Solidarity Platform on 4 March, 2022. The Platform formulated a 10-point Plan that is dedicated to promoting equitable refugee distribution and capacity building for countries to tackle the present tide of humanitarian crisis. The figure below shows its specific content.

Figure 8 The 10-Point Plan under the European Council Solidarity Platform

While concrete achievements have been made in cooperation with the Solidarity Platform, data contribution and transmission are less comprehensive than envisioned, resulting in a still imbalanced refugee accommodation and volatile refugee protection. Therefore, closer negotiations are needed among the EU Member States to boost their engagement in information sharing, and further agreements should be made to increase the practicality of the existing resources and expertise.

c. Feedback Monitoring and Needs Assessment

Scientific monitoring and assessments must be carried out based on substantial data collection and analysis to optimize the management system. For now, considerable resources and platforms have been gathered to tackle the humanitarian crisis caused by the inflow of refugees. However, the specific needs of individuals can be easily ignored, which may prevent refugees from integrating into local societies. Thus, it is imperative to develop systematic needs assessments in education, housing, employment, medicine and other concrete aspects, pushing accurate two-way selections between refugees and assistance providers. It is also vital to complete supervision mechanisms of relevant platforms to seek improvements based on the demand and feedback of temporary residents.

In addition, needs assessments should be carried out to enhance coordination among countries. The Temporary Protection Directive advises host countries to enquire for

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133   European Union, "Commission Recommendation 2020/1366," *European Union*, January 14, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020H1366#:~:text=For%20the%20 purpose%20of%20the%20Migration%20Preparedness%20and,or%20border%20management%20system%20 or%20having%20such%20potential.

134   European Union, "Information from European Union Institutions, Bodies, Offices and Agencies," *European Union*, January 14, 2023 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022X C0321(03)&from=EN.

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refugees' accommodation preferences (including the choice of country to accommodate), which enhances the preparedness for potential hosts to better plan for refugee acceptance.[135] The development of digital networks can also assist in classifying and monitoring the inflowing refugees, so that countries will have a clearer responsibility division, which further facilitates better planning for recourses allocation.

II. Safeguarding Personnel and Data

a. Reinforcing Refugee Identification System

To achieve effective governance of Ukrainian refugees, the EU Member States need to consider coordinating on their border control to avoid direct admission without identification. System-wide sharing of identity information also needs to be strengthened to help separated families to reunite and facilitate the extensive data analyses that follows.

The application of digital technologies is vital to improving refugees documentation. From the technical level, intelligent biometrics has become a standard identification technology with the constant development of artificial intelligence. Intelligent biometrics play an essential role in social governance and commercial activities, because they enable quick and accurate identification of people through the analysis and comparison of biometric information, such as fingerprints, voice prints and iris.[136] Nevertheless, further efforts are needed to unify the standards of intelligent biometrics and coordinate its application among the EU countries, especially in the face of the unexpected and rapid inflow of refugees.

b. Enhancing Compliance with Existing Regulations

William Gibson, the man who first coined the term "cyberspace", defined it as a "consensus imagination".[137] On this platform, there are two pairs of relationships that needs to be properly handled. One is the relationship between "national sovereignty" and "global common space", which focuses on the reconciliation between two attributes of cyberspace; and the other is the coordination between two governance models: government cooperation and multi-stakeholder governance.

The EU upholds the principles of "regional common space" and "multi-stakeholder participation" in its refugee governance. The regional common space means that all EU countries can provide, use, and analyze data for the information sharing platform; Multi-stakeholder participation indicates that the data is open to the whole society, and all countries, enterprises and individuals can request relevant information from the platform through legal channels.

On December 15, 2020, the European Commission issued the *Digital Market Act* and the *Digital Service Act* (DSA), and quickly reached an interim political agreement on DSA with the European Council on April 23. The draft points out the difficulties that Europe currently

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135   European Union, "Information from European Union Institutions, Bodies, Offices and Agencies," *European Union*, January 14 Accessed, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:520 22XC0321(03)&from=EN.
136   Amir Husain, *Ultimate Intelligence*, (CITIC, 2018) 40-41.
137   William Gibson, *Neuromancer* (New York Ace Books, 1984), 23-25.

faces in terms of digital governance, data protection, digital innovation and institutional development in Europe in the coming years. For example, researchers have identified racial bias in an algorithm widely used to predict patients' needs in the US healthcare system and gender bias in algorithms used for work recruitment which can be same applied to the refugees.

The DSA is scheduled to be applied 15 months after it takes effect, or as of January 1, 2024, whichever is the later.[138] It is worth noting that digital transformation should not break through the traditional refugee management framework. It needs to better cater to the needs of the current management model and better integrate the technology with the existing framework to avoid blind trust in and abuse of digital technology.

Another risk that might occur in cases beyond the Ukrainian refugees is the abuse of digital technologies. Digital technologies are not absolutely neutral. Depending on the way they are developed and deployed, these technologies entail potential implications for the promotion, protection and respect of human rights. For instance, facial recognition technologies may be used in ways that facilitate disproportionate state surveillance, such as illegal tracking and monitoring of vulnerable groups. Similarly, AI technologies may inevitably entail biases that perpetuate discriminatory narratives and practices against minorities and groups of individuals based on their race, gender, and ethnic origins. In these cases, it is necessary for regulations to be strengthened and more solid standards to be introduced.

c. Balancing Between Service and Surveillance

There are a series of security concerns in the digital application process among the contradiction between personal information security and service. Hacking, falsification, false reporting, slow iteration and other issues are all potential barriers against the smooth operation of digital information platforms.

In the report "Digital Sovereignty in Europe", policymakers of the EU noted that a transparent and trustworthy online ecosystem has become a hallmark of digital governance in the EU.[139] Transparency lies in digital law and policy making, disclosure of digital governance frameworks, and sharing of data resources. Trustworthiness requires elimination of false or defective information in the digital field through technological development or system improvement.

The application of blockchain technology in refugee information management is one way to protect privacy while ensuring transparency, in which information can be well-maintained and difficult to tamper with. Through the blockchain, people are granted an encrypted ID or code number that sets them apart from others without revealing their true identity. The same record of all encrypted messages on the blockchain will be available to everyone among the thousands or more participants. Because of the mass copies of data at the end of the blockchain network, it is impossible for potential attackers to alter records. This makes blockchain more secure than other traditional centralized systems.[140]

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138   Ryan Browne, "EU Agrees on Land mark Law Aimed at Forcing Big Tech Firms to Tackle Illegal Content," *CNBC*, April 22 , 2022, January 12, 2023 Accessed, https://www.cnbc.com/2022/04/22/digital-services-act-eu-agrees-new-rules-for-tackling-illegal-content.html.
139   Statista, "Country-level digital competitiveness rankings worldwide as of 2022," *Statista*, January 8, 2023 Accessed, https://www.statista.com/statistics/1042743/worldwide-digital-competitiveness-rankings-by-country/.
140   WFP, "How Blocking Technology Is Helping Refugees Grocery Shop in Conflict Zones, " *World Food Program (USA)*, June 23, 2021, January 13, 2023 Accessed, https://www.wfpusa.org/articles/blockchain-tech-helps-refugees-grocery-shop-in-conflict-zones/.

Country Positions

Ukraine

Although Ukraine is not a member of the European Union, it is the most significant stakeholder in the Russia-Ukraine Conflict. Ukraine used to export electricity and energy under the framework of the European Union of Transmission System Operators. In June 2021, Ukraine signed an "Gas Corporation in Rhodes" with Poland, in which the two countries considered exporting electricity to Romania and Slovakia on commercial terms.[141]

The military actions between the two states has disrupted the energy supply chains in the Black Sea region. The massive missile strike during the Conflict destroyed the key energy infrastructure in many parts of Ukraine, hitting several power plants and causing emergency power cuts in Kyiv.[142] Based on publicly available evidence, the damage to housing facilities resulted from the military activities was estimated to reach 62.5 billion U.S. dollars as of September 2022. A further 35.3 billion U.S. dollars were recorded in direct losses. At 50.5 billion U.S. dollars as of September 2022.[143] An additional 35.3 billion U.S. dollars were recorded in the direct losses from damages to transportation infrastructure. The total damage to the physical infrastructure of the war that began on February 24, 2022, was estimated at 127 billion U.S. dollars.[144]

Even more worrying is the situation at Zaporoge, the largest nuclear power station in Europe. Nuclear power was estimated to account for 55% of Ukraine's electricity generation in 2021, as compared with the 51.2% in 2020. The International Atomic Energy Agency (IAEA) has reported that the plant's external power supply is inadequate, leaving it to use diesel generators to facilitate cooling and other basic nuclear safety functions. If the power supply cannot be solved for a long time, there is a high risk of leakage and self-explosion of the nuclear power plant..[145]

In the short term, Ukraine's energy sector would require an estimated 800 million Euros of emergency assistance to meet the average energy needs of its domestic population. [146]However, the even higher energy price in the EU, and the long period for reorganizing pipelines are both hindering the process of energy import.

In the long term, the damaged energy facilities made it necessary for Ukraine to rebuild its energy system. In addition to the use of more advanced technology, it is vital to build up its resilience and defense capability against physical threats.

141   IEA, "Speak about President Poroshenko," *International Energy Agency*, June 8, 2022, January 10, 2023 Accessed, https://www.energy.gov/articles/secretary-energy-rick-perry-will-lead-united-states-delegation-ukraine.
142   IEA, "US and Ukraine Energy Corporation," *International Energy Agency*, June 4, 2022, January 8, 2023 Accessed, https://www.energy.gov/ia/downloads/memorandum-cooperation-among-republic-poland-ukraine-and-united-states-america.
143   *Ibid.*
144   Statista, "Ukraine infrastructure war damage," *Statista*, November 23, 2022, January 3, 2023 Accessed, https://www.statista.com/statistics/1303344/ukraine-infrastructure-war-damage/.
145   Statista, "Nuclear electricity shares Ukraine," *Statista*, November 23, 2022, January 3, 2023 Accessed, https://www.statista.com/statistics/959620/nuclear-electricity-shares-ukraine/.
146   *Ibid.*

The chaos border control is on account of regional war and lack of information transparency. The information blackout is mainly because of the Ukrainian government's desire not to loss of population. However, due to the deterioration of domestic situation caused by the war, the Ukrainian government could not guarantee the absolute security of the people. Therefore, it needs European countries to provide assistance, temporary protection, and the transparency and management of information[147]

As the Conflict rages on, Ukraine is running short of troops on the frontlines and is desperate to expand its military, calling on citizens who have fled to other countries to return and join the fight. By the end of 2022, the Ukrainian government had issued six "Conscription Calls".

In reality, the flow direction of displaced persons varies from person to person. Among them, the choice of different flowing destination depends more on Ukrainians' income level. The middle and low-income groups of refugees are moving within Ukraine because they cannot afford long-distance travel; the middle-class and skilled people are moving to Poland, the Czech Republic, Germany and other central European countries; while the high-income groups are pushing to Western Europe, North America and Israel and other places.

Although it remains unclear when the special military operation will end, there are two factors that could hinder the return of refugees: the low level of economic development in Ukraine, and the Conflict's damage on domestic infrastructure. Since the "Revolution of Dignity" in 2014, Ukraine's per capita income has fallen behind that of Moldova, ranking the last in Europe and the 103rd in the world in 2021.Poor economic conditions have made reconstruction more difficult which finally reduced the willingness of refugees to return home.

Affected by the Conflict, all kinds of infrastructure in Ukraine have been damaged to varying degrees such as railways, airports, water installation stations.Since the Chornobyl nuclear accident in 1986, buildings across Ukraine have not been able to tap water directly from their facilities. They have had to tap water from designated old water presses or from regular water trucks and mineral water from supermarkets. In addition, public institutions such as hospitals and schools have been bombed in parts of Ukraine, making it difficult for citizens to access medical services and education. More than 625,000 residents in Luhansk and Donetsk have been out of electricity for weeks.[148]

Furthermore, Ukraine is dependent on EU's economic and military assistance through concessions on refugees and energy. As the situation evolves, the EU support for Ukraine is expected to loosen gradually, and the biggest challenge for Ukraine lies in securing and sustaining large-scale aid in the future.

147   ILO, "The impact of the Ukraine crisis on the world of work: Initial assessments", *International Labour Organisation Brief*, May 11, 2022, June 13, 2023 Accessed, https://www.ilo.org/wcmsp5/groups/public/---europe/---ro-geneva/documents/briefingnote/wcms_844295.pdf.

148   UNICEF, "30,000 Ukrainians returning home every day, say relief agencies", *UNICEF*, April 14, 2022, June 15, 2023 Accessed, https://news.un.org/en/story/2022/04/1116212.

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Germany

The energy prices in Germany for 2023 have soared to new records due to the ongoing European energy crisis. Germany's electricity price for private households has surged at an unprecedented rate over the past year. According to local researchers, the recorded price peak was broken five times between August 2021 and January 2022.[149]

The European energy crisis seriously impacts Germany's domestic industrial base. As the EU's most heavily industrialized country, German energy-intensive companies are being hit hard by the explosive rise in energy costs. Compared with other Member States, Germany's manufacturing industry is now costing 45 percent more,[150] massively outpacing the EU's general inflation rate of 7.9 percent.[151] Apart from the industrial sector, the current energy crisis would exert much more daunting impacts on individuals and households, especially for the lower-income classes. German economic and energy minister predicted that there would be massive unemployment, poverty, and people who could not heat their homes if Russian supplies were cut off completely. The German government has been paying efforts to reduce gas consumption. Residents are encouraged to use less hot water, while the heating of public buildings will be limited, and lights on advertising billboards will be switched off at night.[152]

German government initiated a number of policies and measures to mitigate the impact of gas shortage over the past year. One of them is the initiation of switching to liquefied natural gas (LNG). In this context, domestic LNG-terminals' development is promoted and the approval process has been shortened. Meanwhile, the German Minister of Economic Affairs visited potential LNG importers, including Qatar and Norway, to address the possible procurement. These two countries have now announced a long-term partnership with Germany for LNG imports.[153]

Acting as a global pioneer in renewable energy application, Germany has decided to replace all Russian energy imports through environmental technologies as soon as mid-2024.[154] However, these plans will be laid on the table for a better phrase. Germany's economy suffers from a full-blown energy shortage crisis and a disrupted supply chain.

Despite concerned efforts to reduce demand and diversify energy supply, German gas

149   Abi Carter, "Cost of electricity in Germany reaches all-time record high," *I AM EXPAT,* January 27, 2022, January 24, 2023 Accessed, https://www.iamexpat.de/expat-info/german-expat-news/cost-electricity-germany-reaches-all-time-record-high#:~:text=The%20price%20of%20electricity%20for%20private%20households%20in,the%20price%20record%20high%20was%20broken%20five%20times.
150   Jonathan Schramm, "The European Energy Crisis Explained," *finmasters*, October 4, 2022, January 24, 2023 Accessed, https://finmasters.com/european-energy-crisis-explained/.
151   Tsvetana Paraskova, "Energy Crisis Poses Existential Threat To Europe's Industry," *Oilprice*, October 20, 2022, January 24, 2023 Accessed, https://oilprice.com/Energy/Energy-General/Energy-Crisis-Poses-Existential-Threat-To-Europes-Industry.html#:~:text=Energy%20Crisis%20Poses%20Existential%20Threat%20To%20Europe%E2%80%99s%20Industry,proposals%2C%20but%20urge%20Brussels%20to%20take%2-0further%20action.
152   Willa Rubin, "Facing an energy crisis, Germans stock up on candles," *National Public Radio*, December 20, 2022, January 24, 2023 Accessed, https://www.npr.org/sections/money/2022/12/20/1144258347/facing-an-energy-crisis-germans-stock-up-on-candles.
153   Thomas Burmeister, Verena Rudolph, "Germany's Reaction to the Energy Crisis," *White&Case*, April 27, 2022, January 24, 2023 Accessed, https://www.whitecase.com/insight-alert/germanys-reaction-energy-crisis.
154   World Economic Forum, Reuters, "Germany takes new steps to tackle the energy crisis," *World Economic Forum*, August 24, 2022, January 24, 2023 Accessed, https://www.weforum.org/agenda/2022/08/energy-crisis-germany-europe.

prices quadrupled in 2022 compared to the year before. Prices have fallen recently but are still much higher than before the Conflict. While Germany is tapping alternative importers, the gas costs more because of reduced supply and higher transport costs.

France

France has been a pioneer and leader in global energy transition, hosting the COP21 and the Paris Agreement. Nuclear energy, accounting for 71% of its energy mix in 2019, prominently accelerated France's decarbonization process.[155] Though sustainable and rather independent of Russian imports, France's energy supply became unstable when the gas price started to skyrocket in July, 2022.[156] Lacking a diversified energy supply strategy, the French government has adopted a series of measures to ensure its energy security, such as reducing heating temperature, freezing gas tariffs, offering governmental subsidies, etc.[157] Meanwhile, France is accelerating LNG capacity building and postponing the shutdown of coal plants. While nuclear power plants are currently facing availability issues and possible low output, France has turned its eyes to other renewable energies, including solar and wind power, and is determined to reduce administrative processes for the development of renewables.

By July 4, more than 100,000 refugees had become beneficiaries of the subsidy for asylum seekers (Ada) in France.[158] *Techfugees*, an association with France as one of its two bases, offers humanitarian support in realms of rights and information, health, education, employment, and inclusion, with the aid of technology.[159] A portal named "Je m'engage pour l'Ukraine" (I am committed to Ukraine) is launched under the collaborative force of the state and the public. Other portals are also set up, offering useful information and technical devices by Ukrainians' arrivals.

Poland

With Russia taking up half of natural gas and dominating roughly 75 percent of coal imports, Poland is heavily reliant on Russian energy supply. However, firmly confronting Russia in wartime, Poland has been urging the EU to reduce its dependence on Russian energies. Russia ended up cutting its coal and natural gas export to Poland in March 2022 and April 2022 respectively.

Though declined sources have shaken the native energy structure, Poland set an example in weaning itself off Russian energy by sketching out infrastructure-building plans to expand import. Together with expanding LNG terminals, Poland is constructing

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155   IEA, "France 2021 Executive Summary," *International Energy Agency*, January 26, 2023 Accessed, https://www.iea.org/reports/france-2021/executive-summary.

156   AMO, "United in Diversity? National Responses to the European Energy Crisis," *Association for International Affairs*, January 27, 2023 Accessed, https://institutdelors.eu/wp-content/uploads/2022/05/20220530_AMO_United_in_diversity-3.pdf.

157   *Ibid.*

158   Julia Pascual, "We Have Crossed the threshold of 100,000 Ukrainians in France," *Le Monde*, July 4, 2022, January 26, 2023 Accessed, https://www.lemonde.fr/en/france/article/2022/07/04/we-have-crossed-the-threshold-of-100-000-ukrainians-in-france_5989000_7.html.

159   Faire, "Techfugees: Technology as a Core Solution for the Inclusion of Refugees," *Faire*, February 4, 2020, January 27, 2023 Accessed, https://en.faire.eu/post/techfugees-technology-as-a-core-solution-for-the-inclusion-of-refugees.

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complex networks of pipelines with other European countries to enhance natural gas supply, particularly, the Baltic Pipe is estimated to offer 10 bcm of natural gas annually in the future to substitute for the import of Russia.[160] In addition, Poland is vigorously developing relevant technologies to make the energy system more sustainable, including nuclear energy power generation, Renewable Energy Systems (RES) and hydrocarbon.

Poland has made remarkable contributions to receiving Ukrainian refugees. According to Polish Border Guard agency, Poland has taken 9.4 million refugees fleeing Ukraine till January 2023, showing a sharp contrast against its gross receiving number of 4,875.00 in 2021. [161]A specialized law was published in March 2022, under which concrete actions were taken to improve refugee management, including granting PESEL (Universal Electronic System for Registration of the Population), distributing Family Welfare Capital welfare and involving refugees in its COVID-19 vaccination program. Furthermore, an estimated 77 percent of Poland's population was dedicated to providing help to Ukrainian refugees,[162] gathering strong civilian strength.

However, it seems that Poland currently enters a period of exhaustion due to the lasting pressure imposed by refugees' inflow, in which the existing resources cannot meet the need with employment decreasing and housing saturating. For lack of coordination and governmental allowance, volunteers and voluntary families also fall enormously, making more refugees live in want. Moreover, refugees are facing potential danger as anti-refugee sentiment grows under the receiving tension.

Poland has shown generosity in welcoming Ukrainian refugees, but at the same time, digitalization and corresponding cooperation are needed to make the current management system more resilient.

Spain

Despite its national objective of reaching national climate neutrality by 2050, the energy mix of Sweden is heavily dominated by fossil fuels.[163] On 22 September, 2022, gas prices in Spain rose by 200 per cent on average.[164] Signs were shown in October 2021, when the most expensive electricity bills were seen and the record was surpassed subsequently. The sudden reduction of Russian gas supply and upsurging international energy prices, along with a cold winter, intensified the drastic increase in energy and electricity prices.[165] Subsidies are offered to electricity consumers ever since. The Spanish government has managed to reach the "Iberian exception," which guarantees a

160   Jeanne Whalen, "Poland spent decades trying to quit Russian gas. Now it has no choice," *The Washington Post,* April 27, 2022, January 25, 2023 Accessed, https://www.washingtonpost.com/world/2022/04/27/poland-russian-gas-diversify-strategy/.

161   World Bank, "Poland Refugee Statistics 1991-2023," *Immigration*, January 25, 2023 Accessed, https://www.macrotrends.net/countries/POL/poland/refugee-statistics#:~:text.

162   Eric Reidy, "Is Poland's smooth reception of Ukrainian refugees heading for trouble?" *The New Humanitarian*, August 4, 2022, January 25, 2023 Accessed, https://www.thenewhumanitarian.org/news-feature/2022/08/04/Poland-Ukraine-refugee-concern-grows#:~:text.

163   IEA, "Spain 2021 Energy policy Review," *International Energy Agency,* January 26, 2023 Accessed, https://www.iea.org/reports/spain-2021.

164   MoneyDJ, "Annual Rates for 'New Contracts' of Natural Gas in Spain Has Risen by 200%," *MoneyDJ*, August 24, 2022, January 17, 2023 Accessed, https://www.moneydj.com/kmdj/news/newsviewer.aspx?a=e4d1a93d-14f5-463b-b4ad-971ef08f74c6.

165   AMO, "United in Diversity? National Responses to the European Energy Crisis," *Association for International Affairs*, January 27, 2023 Accessed, https://institutdelors.eu/wp-content/uploads/2022/05/20220530_AMO_United_in_diversity-3.pdf.

special position for Spain to gradually implement EU's unified action of electricity price caps.[166] Meanwhile, Spain is striving for a balance between developing renewables, mostly solar energy, and progressing nuclear power, with sustainable, environmental, and economic issues concerned. Moreover, based on its geographical position and regasification capacity, Spain is considering to be the hub for liquified natural gas and hydrogen.[167]

Reception, attention, and relocation centers (CREADE) are set up, offering protection for Ukraine refugees. Further, Spain has shown great enthusiasm for refugees to be fully legalized, ensuring their access to education, health, and social policies. However, without adequate techniques and mechanisms, refugees remain to be fully notified.[168]

166   AMO, "United in Diversity? National Responses to the European Energy Crisis," *Association for International Affairs*, January 27, 2023 Accessed, https://institutdelors.eu/wp-content/uploads/2022/05/20220530_AMO_United_in_diversity-3.pdf.
167   *Ibid.*
168   Reuters, "About 25,000 Ukrainian Refugees Have Reached Spain so Far, Says Minister," *Reuters*, March 21, 2022, January 27, 2023 Accessed, https://www.reuters.com/world/europe/about-25000-ukrainian-refugees-have-reached-spain-so-far-says-minister-2022-03-21/.

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Questions to Consider

1.What are the barriers on the EU's way towards diversification of energy import partners? And how can the EU overcome these difficulties?

2.Which ones among all the EU countries are more favorable of imposing sanctions on Russian gas import? And which ones of them are less supportive of such actions?

3.What are the obstacles to promoting green transition? How can we guarantee a smooth and lasting transition that fully matches the pace of European socioeconomic development?

4.The sharp decline in Russian gas supply forced Europe to reconsider burning coal to fill the demand gap. In this context, how can we strike a balance between Europe's "green goal" and crisis mitigation?

5.How would the EU countries react to the artificially raised price of imported gas from the United States?

6.Compared with the digitalization in other fields, what are the unique concerns about applying digital technology to refugee management?

7.Considering the special relationship between Ukraine and European countries, how do you perceive the relationship between European integration, the Europeanization of Ukraine and the management of Ukrainian refugees?

How can we deal with potential risks of privacy infringements that come with Russia-Ukraine Conflict? And how does digital divide among EU countries affect united database building?

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