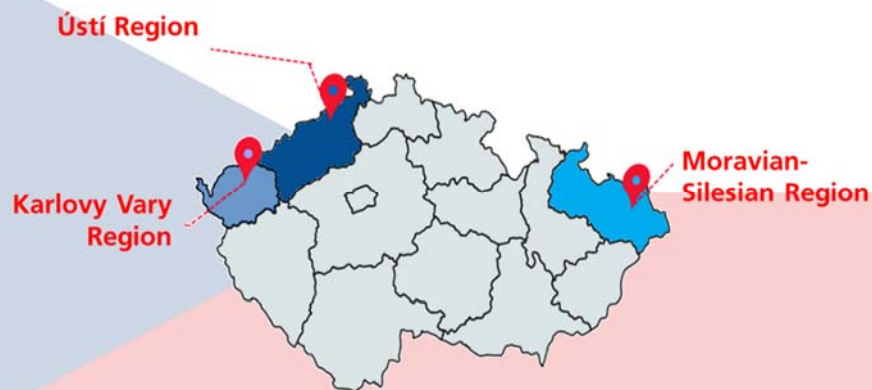


Framework ID: SRSS/2018/FWC/002

SPECIFIC CONTRACT: REFORM/SC2020/111

Support to the preparation of a Territorial Just Transition Plan in the Czech Republic



D1. INCEPTION REPORT (FINAL) For Publication

11.12.2020



Disclaimer

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This project is implemented by Frankfurt School of Finance & Management (as part of the AARC Consortium) in cooperation with Trinomics, Czech Technical University and Cambridge Econometrics

ABBREVIATIONS

AI	Artificial Intelligence
CMMI	Capability Maturity Model Integration
CMZRB	Czech-Moravian Guarantee and Development Bank
CTU	Czech Technical University
CZ	Czech Republic, Czechia
CZK	Czech Crown
CZSO	Czech Statistical Office
D	Deliverable
DG	Directorate General
E3ME	Dynamic, computer-based, global macroeconomic model
EE	energy efficiency
EIB	European Investment Bank
ESF	European Social Fund
EU	European Union
EUR	Euro
EV	Electric Vehicles
GDPR	General Data Protection Regulation
GHG	Greenhouse Gas
ICT	Information and Communication Technology
ITI	Integrated Territorial Investments
JASPERS	Joint Assistance to Support Projects in European Regions
JE	Junior Expert
JTF	Just Transition Fund
JTM	Just Transition Mechanism
JTP	Just Transition Plan
KoM	Kick-off Meeting
KVR	Karlovy Vary region
MEYS	Ministry of Education, Youth and Sports
MFF	Multiannual Financial Framework
ML	Machine Learning
MIT	Ministry of Industry and Trade
MoE	Ministry of Energy
MoLSA	Ministry of Labour and Social Affairs
MoRD	Ministry of Regional Development
MSR	Moravian-Silesian Region
NECP	National Energy and Climate Plans
NGO	Non-Governmental Organisation
NUTS	Nomenclature des Unités Territoriales Statistiques
PWC	Price Waterhouse Coopers
RCA	Regional Policy Common Result Indicators
RCO	Regional Policy Common Output
RES	Renewable energy sources
RfS	Request for Service
RRF	Resilience Recovery Fund
RRP	Resilience Recovery Plan
SC	Steering Committee
SE	Senior Expert
SME	Small and Medium Enterprises
SRSP	Structural Reform Support Programme
START	Secretariat's Technical Assistance to Regions in Transition

SURE	Support to mitigate Unemployment Risks in an Emergency
TACR	Technology Agency of Czech Republic
TJTP	Territorial Just Transition Plan
TL	Team Leader
ToR	Terms of Reference
UJEP	Ústí, Jan Evangelista Purkyně University
UTK	Ústí region
UN	United Nations

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1. PROJECT CONTEXT

1.1 Project Overview

Specific Contract no.	REFORM/SC2020/111
Overall objective	Support to the preparation of a Territorial Just Transition Plan in Czech Republic for the Ústí, the Karlovy Vary and the Moravian-Silesian regions.
Specific objective	<ul style="list-style-type: none"> • Support national authority initiatives to design reforms according to their priorities, taking into account initial conditions and expected socioeconomic impacts; • Support national authorities to enhance their capacity to formulate, develop and implement reform policies and strategies and pursue an integrated approach that ensures consistency between goals and means across sectors; and, • Support the efforts of national authorities to define and implement appropriate processes and methodologies, taking into account best practices and lessons learned by other countries in addressing similar situations.
Requested services	<p>Deliverable 1: Inception report</p> <ul style="list-style-type: none"> • Organise a kick-off meeting between the contractor, DG REFORM and the Ministry of Regional Development (MoRD) • Support the establishment of a steering committee for the contract • Prepare an Inception Report (the present document) <p>Deliverable 2: Report on governance mechanisms and stakeholder engagement</p> <ul style="list-style-type: none"> • Prepare a proposal for the governance mechanisms • Prepare a proposal for the stakeholder engagement strategy • Prepare draft report and present it to the steering committee • Revise draft report based on comments from the steering committee <p>Deliverable 3: Report on the transition process towards climate neutrality</p> <ul style="list-style-type: none"> • Conduct desk research and field visits at the national and regional level • Conduct stakeholder interviews (based on Deliverable 2) • Assess existing plans and strategies, including the transformation strategy of key economic operators • Prepare draft report, present it to the steering committee, and revise it based on comments from the steering committee • Prepare and hold stakeholder workshops to present the revised draft report • Prepare and present the final report, including stakeholder feedback to the steering committee, and finalise it based on comments <p>Deliverable 4: Report on the challenges, needs and action plans for the most affected territories</p> <ul style="list-style-type: none"> • Conduct desk research and field visits at the national and regional level • Conduct stakeholder interviews, based on Deliverable 2; • Prepare an outline of the draft report for feedback from the steering committee • Prepare the draft report, present it to the steering committee, and revise it based on comments from the steering committee • Prepare and hold stakeholder workshops to present the revised draft report • Prepare and present final report including stakeholder feedback to the steering committee, and finalise it based on comments <p>Deliverable 5: Final report</p> <ul style="list-style-type: none"> • Document project activities, monitoring indicators and useful lessons learnt along with recommendations for further implementation of project results • Final reporting
Project starting date	5.10.2020
Project duration	9 Months
Implemented by contractor	Frankfurt School of Finance & Management (as part of the AARC Consortium) in cooperation with Trinomics, Czech Technical University and Cambridge Econometrics

1.2 Purpose of the Report

This Inception Report includes an update on the Project context, key findings for the approach and methodology for each deliverable, and further recommendations. On the 5th of November 2020, the contractor issued a Draft Inception Report. This document includes the updates after receiving comments from the Czech government and the European Commission in two feed-back rounds to reach the final version issued on the 10th of December 2020.

1.3 Project Context Update

1.3.1 EU and country level

Just Transition Fund and Plan

To support access for EU Member States to the Just Transition Fund (JTF), DG REFORM has launched unprecedented support for 18 governments to finalise/elaborate territorial transition plans, which also includes the Czech Republic.

The final decision concerning the budget of the JTF subject to the *trilogue*¹ negotiations took place on the 9 December 2020 and an agreement was reached for EUR 17.5 bn² as follows: *“EU institutions agreed to broaden its scope to also fund micro-enterprises, universities and public research institutions, digital innovation and activities in the areas of education and social inclusion. Investments in renewable energy and energy storage technologies, investments in energy efficiency and heat production for renewables-based district heating, smart and sustainable local mobility will also be financed. The decommissioning or construction of nuclear power stations, activities linked to tobacco products and investment related to the production, processing, transport, distribution, storage or combustion of fossil fuels cannot be funded through the JTF.”*

Once received the final documents, an assessment of the implications of the final agreement on the national planning of and discussions around the Czech JTF so far, will be necessary.

Economy and unemployment

In April 2020, the Czech Statistical Office expected 2020 GDP to decrease by 5.6%, and revert back to growth of 3.1% in 2021.^{3,4} The unemployment rate was expected to grow from 2% in 2019 to 3.5% in 2021. The latest predictions from September 2020 confirm the previous expectations.⁵ However, these predictions are subject to the second wave of the pandemic, where rising cases and considerable uncertainty persist at the time of writing this report.

At the EU level, the macroeconomic response to Covid-19 and the recovery after the pandemic is expected to be heterogeneous across the EU Member States. The European Economic Forecast from July 2020⁶ expected a major drop in the macroeconomic indicators to manifest in the fourth quarter, following the spring lockdowns across Europe. However, as many EU Member States enter their second wave of lockdowns, the situation and development may, at best, be described as unstable and hard to predict.

EU CO₂ emission target update – position of the Czech Republic

The Czech Republic is currently working on its framework position to the Commission’s proposal to cut greenhouse gas emissions by at least 55% by 2030. At the European Council meeting on October 15-16, 2020, the Czech Republic declared willingness to accept the reduction target of 55%, but said it will require a comprehensive impact assessment and final approval of the EU-wide reduction target by the European Council.

¹ Between the European Commission, the European Council and the European Parliament.

² <https://www.europarl.europa.eu/news/en/press-room/20201207IPR93210/deal-on-financing-a-just-energy-transition-in-eu-regions>

³ <https://www.mfcr.cz/cs/aktualne/tiskove-zpravy/2020/mf-ocekava-pokles-ceske-ekonomiky-o-56--38098>

⁴ The data about GDP growth need to be taken with the caution of how GDP is constructed (especially in the times of a pandemic but also climate crisis), as they do not reflect on e.g. the status of natural wealth or social capital and others. For more see, e.g., <https://seea.un.org/content/measuring-wealth-delivering-prosperity>.

⁵ <https://www.mfcr.cz/cs/verejny-sektor/makroekonomika/makroekonomicka-predikce/2020/makroekonomicka-predikce-zari-2020-39418>

⁶ https://ec.europa.eu/info/sites/info/files/economy-finance/ip132_en.pdf

Czech Coal Commission – last developments

In July 2019, the Czech government (Government Resolution No. 565) established a Coal Commission similar to the German model. This body has 19 members from a range of institutions, including representatives of national ministries, regional authorities, energy companies, trade unions, researchers, and NGOs. The aim of the Commission is to formulate a recommendation by March 2021 regarding the timetable for phasing out coal in Czech Republic and to prepare several scenarios for this purpose (phasing out by 2045–2050, between 2038 and 2040 following the German model or 2030–2035).

However, the Covid-19 crisis, with its disastrous economic and social consequences, has restructured the political discourse on energy, climate policy, and on the phase-out of coal. The political debate mainly focuses on the management of the epidemic and measures for economic recovery, underlining the important role the Recovery and Resilience Fund and a convincing green recovery strategy could play for financing the climate and energy objectives of CZ. The debate is trending towards critical statements of key Czech political leaders about the high costs of climate policy. The economic recovery is often perceived as contradictory to the climate transition, without considering the high potential for synergies. The Covid-19 crisis disrupted the activities of the Coal Commission between March and September 2020. The last plenary meeting of the Coal Commission was held online on October 20, 2020. The originally scheduled topic decision about the date of the coal-phase out was postponed to the next plenary meeting of the Commission, which is scheduled for November 20, 2020. In recent weeks, the debate about the impacts of the coal phase-out on the economy, labour market and energy security appears to have some controversial features.

Working group 3 of the Coal Commission (headed by MoRD) deals with the economic and social impacts of the coal-phase out. For this analysis, it needs the data and modelling results from working group 1. However, the Covid-19 crisis caused some delays in the delivery of outcomes from scenario modelling.

Recovery and Resilience facility

In October 2020, the Ministry of Industry and Trade (MIT) submitted the **Principles for the National Recovery Plan** in the context of the Economic Strategy (*Východiska Národního plánu obnovy v kontextu Hospodářské strategie*) to the Czech Government, which lays out the plan for reforms and investments in the Czech Republic to be implemented via funding from the Recovery and Resilience facility (RRF). The plan should be based on and derived from the Economic Strategy, which is currently under preparation. As the RRF (and the RRFs, accordingly) are likely to have a high mandatory climate share (~35%), it is important for the Economic Strategy to consider the corresponding climate objectives.

The Economic Strategy and the National Recovery Plan have six pillars: Digital transformation, Physical infrastructure and green transition, Education and job market, Institutions, regulation and entrepreneurship support in reaction to COVID-19, Research, development and innovation, Health and resilience of the population. The documents have already been submitted to the Commission.

Programmes – EU structural funds programming

As part of the preparation for the 2021–2027 programming period, the MoRD prepared the report “Information on the preparation of documents for the 2021–2027 programming period,” which has been submitted to the Government (October 2020). The material is directly related to the document “Proposal for the distribution of the allocation for the Czech Republic in the programming period 2021–2027 among the operational programmes,” which will be submitted to the government for discussion.

The draft materials also contain the operational programmes “Jan Amos Comenius” managed by the Ministry of Education, Youth and Sports and “Employment Plus” managed by the Ministry of Labour and Social Affairs. These programmes could be particularly important due to the anticipated relevance of human capital, training, skills and employment related solutions for successful just transition processes.

The presented material also contains information on the implementation possibilities for the second and third pillars of the Mechanism for Just Transition in the Czech Republic during the programming period 2021–2027. It describes the operation principles and implementation possibilities in the Czech Republic, and provides more information on the possibility of using the Invest-EU programme. The second pillar of the Just Transition Mechanism are especially important to support the private sector and larger enterprises in the Just Transition regions.

The various programme structures and their timeframes are summarised in Annex 2.

Special Focus: Digitalisation and AI/ML

The EU Member States estimate that the economic impact of the automation of knowledge work, robots and autonomous vehicles will reach between EUR 6.5 and 12 tn annually by 2025. At a global level, research from PWC indicates that AI could increase global GDP by 14% by 2030 – the equivalent of an additional USD 15.7 tn – making it the largest opportunity in today’s fast changing economy. As we enter the age of automation, governments must ensure that they are ready to capitalise on the potential power of AI.

The Council Recommendation on the 2020 National Reform Programme of the Czech Republic established digitalisation of the economy as one of the key priorities. Czech Republic could be particularly affected by technological change and needs significant investment in this area. Digital transformation will require support, including in industry and service sectors, through targeted investment in smart solutions and skills. The authorities are committed to the development and integration of new digital technologies, but this is hampered by persistently low skills levels. Although **Czech authorities are committed to encouraging solutions based on artificial intelligence**, the country still lags behind frontier Member States in terms of research and patent activities in this area.

Through Resolution No. 629 of 3 October 2018, the Government of the Czech Republic approved the strategic document **Digital Czechia**, which covers the impacts of digitisation on the economy and society. The resolution is a set of concepts to ensure the preconditions for the long-term prosperity of the Czech Republic (Textbox 1).

Textbox 1: Digital Czechia

The three pillars of “Digital Czechia”

- 1. Czechia in digital Europe:** This concept aims to ensure a unified and innovative approach of the Czech Republic regarding the digital agenda at the European Union level, in accordance with modern technological trends and EU regulations. This pillar outlines the priorities, interests and national specificities of the Czech Republic. The document is based on the conclusions of the Presidency of the Government Council for the Information Society (RVIS) on 23 March 2018. [<https://www.digitalnicesko.cz/cesko-v-digitalni-evrope/>]
- 2. The Information concept of the Czech Republic:** All subjects according to the Information Systems Act (365/2000 Col.) are obliged to bring their information concepts and their information systems into adherence with the ICCR. The information concept of the Czech Republic is a concept for the development of public administration and eGovernment information systems. The concept is prepared by the Ministry of the Interior and approved by the government.
- 3. Digital economy and society concept:** This pillar is a key and crosscutting area of digitisation across all of society. The Ministry of Industry and Trade manages the concept and is, for the most part, its implementation partner. In particular, the concept supports the positive aspects of social and economic change related to the digital revolution and minimises the negative impacts (e.g. on the labour market).

To have a standard, benchmarked indication of AI readiness in the country, we will refer to the "Government Artificial Intelligence Readiness Index 2019" compiled by Oxford Insights and the International Development Research Center. The standardised score is from zero (0) to ten (10), and is comprised of 11 input metrics, which are grouped under four high-level clusters: governance; infrastructure and data; skills and education; and government and public services. The data is derived from a variety of resources, ranging from our own desk research on AI strategies, to databases such as the number of registered AI start-ups on Crunchbase, to indices such as the UN eGovernment Development Index.

The Czech Republic ranks within the top five governments in Eastern Europe with a score of 6.7, which is behind Estonia, Poland and Russia. In May 2018, Czech Republic, Hungary, Poland and the Slovak Republic, published a Joint Declaration on Future Cooperation on Industry 4.0 projects, with emphasis on AI. In May 2018, the Czech government adopted its national **Artificial Intelligence (AI) strategy**, with the aim of improving country's economic growth and competitiveness through:

- The development of a trusted and responsible AI ecosystem;
- The digital transformation of enterprises, in particular SMEs; and,
- The economic development of society, based on equitable opportunities and benefits in AI.

Policy actions of the strategy cut across several key areas: education, R&D, financing, industry, social impacts, regulation and international cooperation.

The development of automation and **AI is advancing quickly in Czech Republic** and the long-term nature of the JTPs requires consideration of the application of digitalisation and the potential of AI/ML for **transition strategies**.

1.3.2 RE:START, START and other support programmes

RE:START

RE:START was initiated in 2014 – the Government assigned MoRD to elaborate the restructuring strategy of three structurally weak/affected regions (Ústí (UTK), Karlovy Vary (KVR) and Moravian-Silesian (MSR)). In the same year, the Czech Government reactivated the position of Government Commissioner for those regions. Afterwards, in 2017, the Economic Strategy (Strategic Framework) and Action Plan were elaborated and approved by the Government. The Action Plan is updated every year, and the third-year Action Plan is currently being implemented. The overall goal of the strategy is to change the economic structure and accelerate economic growth in the affected regions.

To achieve this objective, RE:START has seven pillars that cover 94 measures beyond the scope of the JTPs. In addition, the RE:START organisational structure is quite complex. Currently, it is managed by the Department of RE:START Strategy at MoRD and cooperates closely with MIT. Here, the RRP's are channelled through MIT and its regional branches (refer to Annex 3, RESTART Organisation Structure).

The incremental share of national sources on the overall funding stream is rather small. Detailed data can be found in the report “Aktualizace vstupní analýzy Strategie hospodářské restrukturalizace Ústeckého, Moravskoslezského a Karlovarského kraje” [Update of Introductory Analysis for the Strategy of Economic Restructuring of UK, MSR, KVR], 2020.

Table 1: National financial resources assigned to the RE:START (as of Sept 30, 2019)

Ústí Region	1.888 bn CZK
Karlovy Vary region	0.283 bn CZK
Moravia-Silesia region	2.687 bn CZK
Total	4.858 bn CZK

Note: 1 EUR equivalent of 26.2 CZK (September 2020)⁷

To date, there is no systematic coordination of measures within the RE:START strategy on energy and climate transition. Action Plan No. 3 includes some activities for emission reduction and clean mobility. The coordinating agency (MoRD) is discussing the overlap and need for coordination in the context of JTP preparation. A new pillar of “Transformation of Energetics and Reduction of Coal Mining” was included in the most recent Action Plan No. 4, which is currently in an approval process and includes further activities that aim to stimulate the green transition.

More detailed information about the RE:START strategy can be found in Annex 3.

Modernisation Fund

The Modernisation Fund is poised to become the most important source of funding for projects in the energy and transport sector.

The programming activities are coordinated by the Ministry of Environment of the Czech Republic. The following activities are ongoing: design of activities for funding schemes, establishment of a platform, and ex-ante evaluation of the programme (supported by a project funded by European Commission). All regions in the Czech Republic are eligible for funding.

START (Karlovy Vary region)

The START project supports the Karlovy Vary region under the EU Coal Regions in Transition Initiative. The project period of implementation is from 1 November 2019 – 31 October 2021. The project supports the regional government of Karlovy Vary via strategic projects, regional action plans and the overall energy transition of the region.

Specific regional programmes

There are no specific regional programmes funded from national or EU sources, aside from the RE:START strategy, the EU structural funds programmes and the Technology Agency programme.

⁷ https://ec.europa.eu/info/funding-tenders/how-eu-funding-works/information-contractors-and-beneficiaries/exchange-rate-infoeuro_en

This stands in contrast to the call for specific projects aiming to revitalize brownfields in the Ústí region. All three regions have minor programmes funded from regional sources to support specific projects, mainly in the areas of social and health services, education, entrepreneurship and small business.

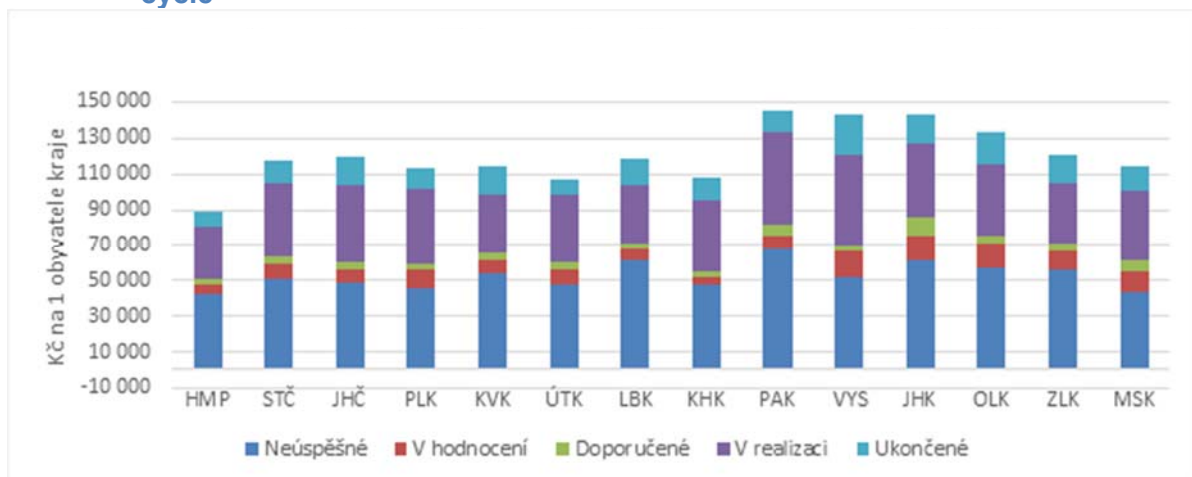
Support of innovation activities in three coal regions (MIT funding programme, MoRD programmes)

Innovation activities are supported from various programmes, mostly from EU structural funds operational programmes and from the Technology Agency.

Operational programmes

The expenditures from all operational programmes in CZK per inhabitant per Region as of 30 September 2019 are illustrated in Graphs 1 and 2. Importantly, some 50% of the projects are unsuccessful, i.e. do not qualify for further action. The absorption capacity (e.g. in terms of project development skills) appears to be limited and is also likely to play an important role for the successful implementation of the JTPs. Alternatively, JTPs may need to explicitly reserve funding for project development and other skills/capacity development activities to facilitate eventual JTP implementation, including new instruments and approaches in the RRF supported by the new Operational Programme related to the JTF.

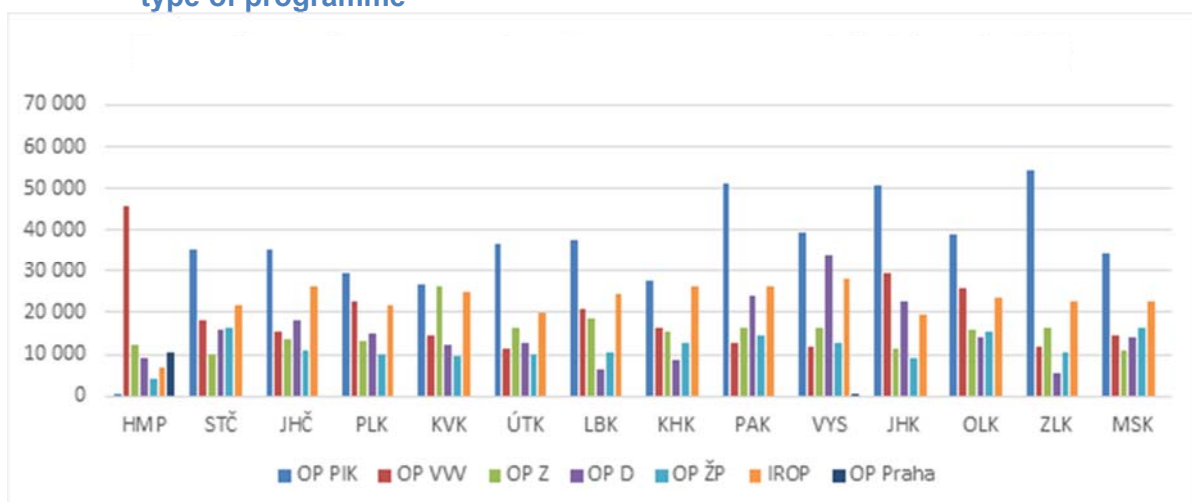
Graph 1: Expenditure from all Operational Programmes per inhabitant, by project cycle



Note: The bars include non-successful (Neúspěšné), under evaluation (V hodnoceni), recommended (Doporučene), implemented (Vrealizaci), and finished (Ukoncene) projects.

Source: Aktualizace vstupní analýzy Strategie hospodářské restrukturalizace Ústeckého, Moravskoslezského a Karlovarského kraje [Update of Introductory Analysis for the Strategy of Economic Restructuring of UR, MSR, KVR], 2020.

Graph 2: Expenditure from all Operational Programmes per inhabitant in CZK, by type of programme



Note: Regarding the indicator, CZK funding provided per inhabitant in the three coal regions (UTK, KHK, MSK) is in line with the average.

Source: Aktualizace vstupní analýzy Strategie hospodářské restrukturalizace Ústeckého, Moravskoslezského a Karlovarského kraje [Update of Introductory Analysis for the Strategy of Economic Restructuring of UTK, MSR, KVR], 2020.

Support of direct investment with focus on three coal regions

(Foreign) direct investments are regulated by the Act No. 72/2000 Coll. on Investment Incentives, in force since 6 September 2019. The responsible ministry is the Ministry of Industry and Trade (MIT) and the programme is managed by CzechInvest. On 6 September 2019, the amended Act on investment incentives also came into effect. The main change is the preferential treatment of projects with higher value added, particularly technology centres (e.g. aerospace, ICT, life sciences, nanotechnology and advanced segments of the automotive industry) and the retraining of employees in all regions of the Czech Republic except for Prague, which is a shift from large-scale investments that create jobs for candidates with a lower level of education. Regarding incentives, support will only be provided for projects with high added value, focused on research and development and involving jobs for individuals with university education.

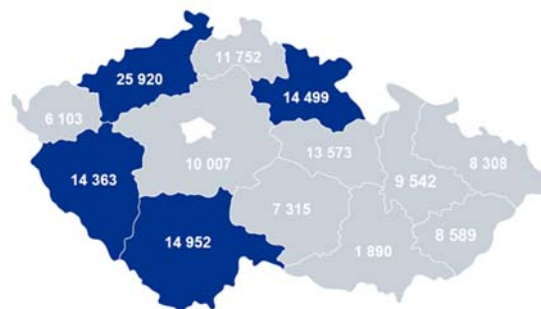
All investment-incentive applications have to be assessed and approved by the government. All investment-incentive applications must contain a detailed quantification of anticipated contributions to public budgets and impact on the labour market; information on how the applicant intends to incorporate research and development into his activities; information on collaboration potential with research institutes and schools; and, the potential for local suppliers to participate and contribute to the development of the local infrastructure.

For the period 1 July 2014 – 31 December 2020, the amount of CZK 11,8 bn per year has been allocated. The programme of investment incentives must be regularly evaluated (State aid SA.38751 (2014/N) – Czech Republic – Evaluation plan for the block exempted large aid scheme "Law on Investment Incentives"). Figures 2 and 3 illustrate data for the first half of the programme.

Figure 1: Number of investment incentives received



Figure 2: Amount of investment in CZK per capita



Note: Dark blue are the regions with highest amounts of investment per capita. Again, the Ústí region is most successful.

Source: https://www.mpo.cz/assets/cz/podnikani/dotace-a-podpora-podnikani/investicni-pobidky-a-prumyslove-zony/investicni-pobidky/2019/3/Hodnotici_zprava_v_polovine_obdobi_final.pdf and KPMG Hodnotící zpráva v polovině období dle Plánu hodnocení režimu státní podpory GBER: Investiční pobídky v České republice [Interim Evaluation interim report GBER: Investment Incentives in the Czech Republic, 2018].

The Ústí region is the most relevant region in the Czech Republic concerning investment incentives and amount per capita.

1.3.3 Transition Regions, including status of the Territorial JTPs and potential project lists coordination for Environment/Energy/Economy

During the kick-off meeting, we presented an initial snapshot on the regional situation (expert judgement) as highlighted in Table 2.

Table 2: Situational snapshot of the in the Karlovy Vary, Ústí and Moravian-Silesian regions

CRITERIA	ÚSTÍ	KARLOVY VARY	MORAVIAN-SILESIA
<u>Economy, entrepreneurship and innovation</u>			
Aging population	Yes	Yes	Yes
Lack of diversification	Yes	Yes	Partially
Innovation	Partially	Partially	Yes
<u>Employment</u>			
Increase of unemployment	No	No	No
Unskilled workers	Yes	Yes	Partially
<u>Sustainable environment</u>			
Air pollution	Partially	Partially	Yes
Contaminated production sites	Partially	Partially	Yes
Negative impact on health	Partially	Partially	Yes
Lack of GHG free energy	Yes	Yes	Yes
<u>Mobility and interconnection</u>			
Lack of Infrastructure and accessibility	Partially	Partially	Partially
→ Transition Challenges need to be tackled, but also depend on the absorption capacity of the regions			
<i>Note: without impact of COVID-19</i>			

This initial matrix (to be developed further in the course of the project), contains a set of key categories that need to be considered and further expanded upon through the development of specific indicators.

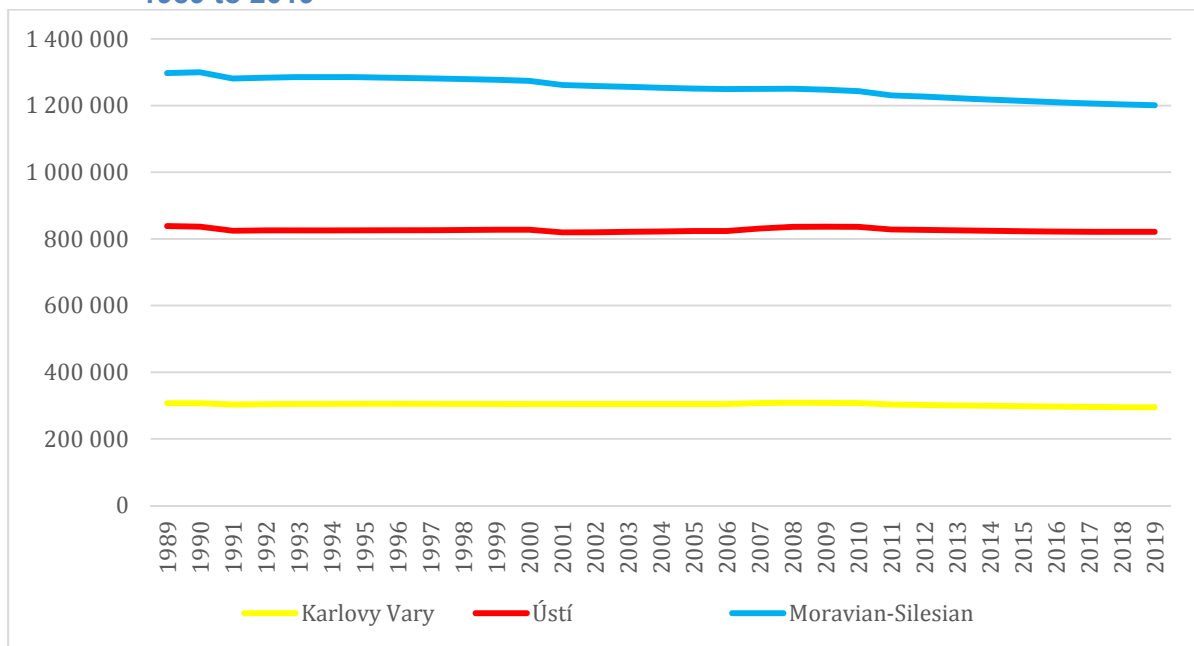
Specific challenges of the three coal regions – background and update of data

The three traditional coal regions in the Czech Republic - Ústí region, Karlovy Vary region (both with tradition in brown coal mining) and Moravian-Silesian region (hard coal mining) share some common development features after the fall of the communist regime in 1989. This dramatic change impacted all areas of the Czech economy including coal mining and the power plant industry. The three Czech coal regions faced similar challenges in restructuring their economies and entrance into market-based competition at national and international level.

Brown coal mining fell from 87 million tonnes of brown coal in 1990 to 39.2 million tonnes in 2018. The decline in hard coal mining was even higher: from 35 million tonnes to 4.1 million tonnes. According to current assumptions (October 2020), hard coal mining will stop by 2022. Brown coal still has a significant share in electricity production, and in 2019, made up 40% of gross electricity production (87 TWh).

Although the coal regions share commonalities, there are also some differences in their development after 1989. First, in terms of **population**, the Moravian-Silesian region is larger than the other two coal regions combined – see Graph 3. Since 1989, the population of this region decreased from 1.3 million to 1.2 million inhabitants while the population of the other two regions has remained stable. However, the composition of the population is changing (i.e. migration of young qualified people to other regions and inflows of people with lower levels of qualifications to the regions).

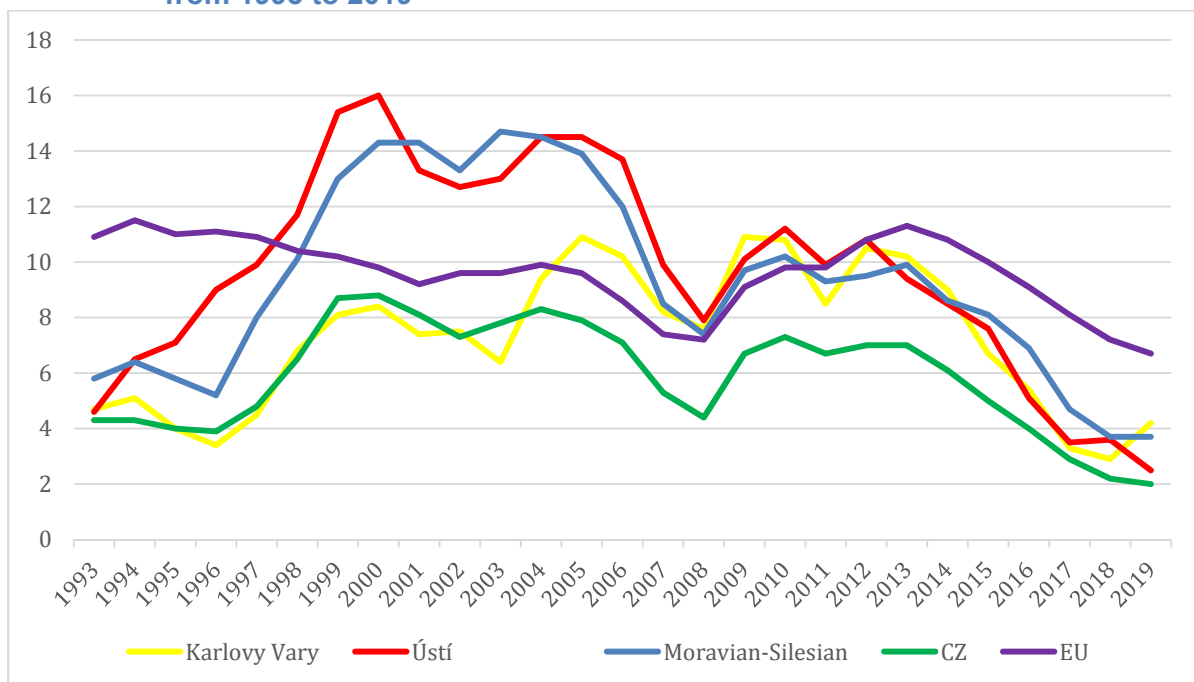
Graph 3: Population in the Karlovy Vary, Ústí and Moravian-Silesian regions – from 1989 to 2019



Source: CZSO. (2020). Development of the number of inhabitants in the Czech Republic, Karlovy Vary, Ústí nad Labem and Moravian-Silesian regions in the years 1989–2019. Retrieved October 24, 2020, from <https://www.czso.cz/>, <https://data.worldbank.org/indicator/SP.POP.TOTL?end=2019&locations=EU&start=1989&view=chart>

The **unemployment rate** (Graph 4) in all three coal regions has trended in the same direction since 1989, although the Karlovy Vary region reported lower unemployment from 1994–2008. Since 2008, this difference disappeared, and in recent years, the unemployment rate in Karlovy Vary region has been increasing faster than in the other two regions.

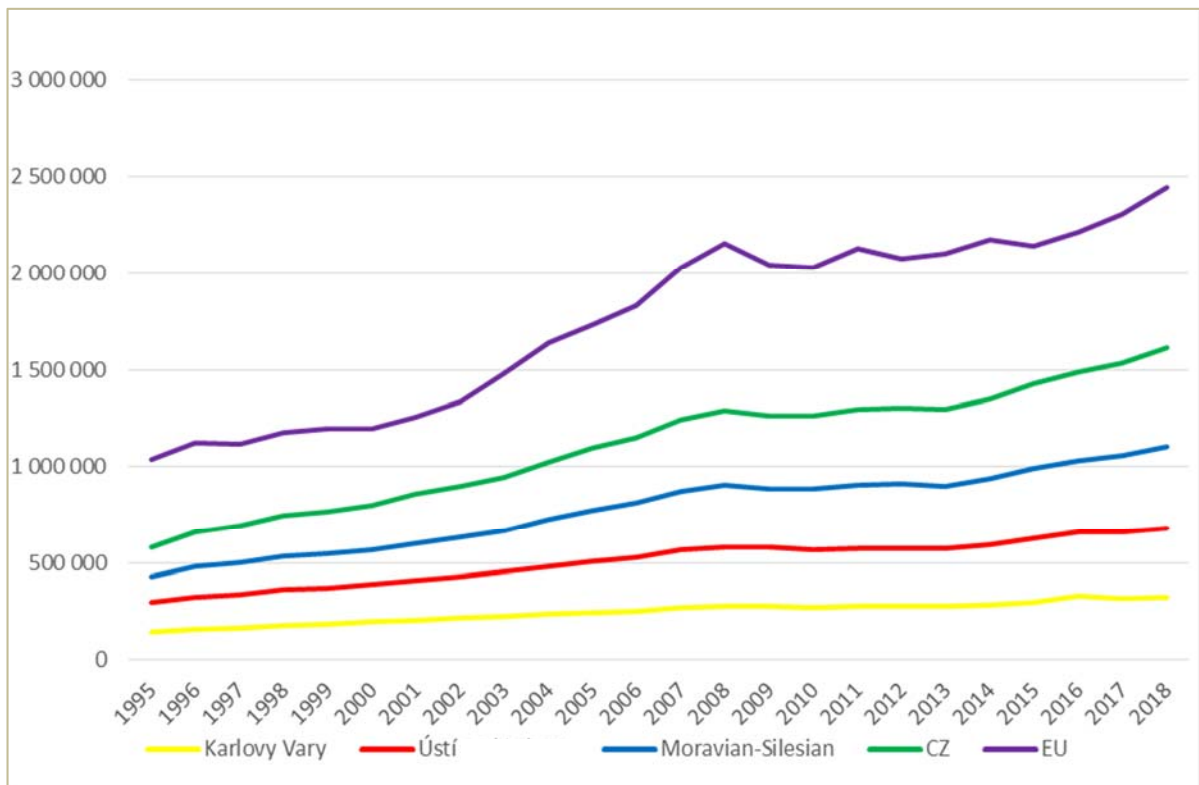
Graph 4: Unemployment (%) in the Karlovy Vary, Ústí and Moravian-Silesian regions – from 1993 to 2019



Source: CZSO. (2020). Development of unemployment in the Czech Republic, Karlovy Vary, Ústí nad Labem and Moravian-Silesian regions in 1993–2019. Retrieved October 24, 2020, from <https://www.czso.cz/>, <https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS?locations=EU>

As for **GDP per capita**, all three regions lag behind the EU and Czech Republic average (including Prague), where the Moravia-Silesia Region has slightly outperformed its two peers (Graph 5).

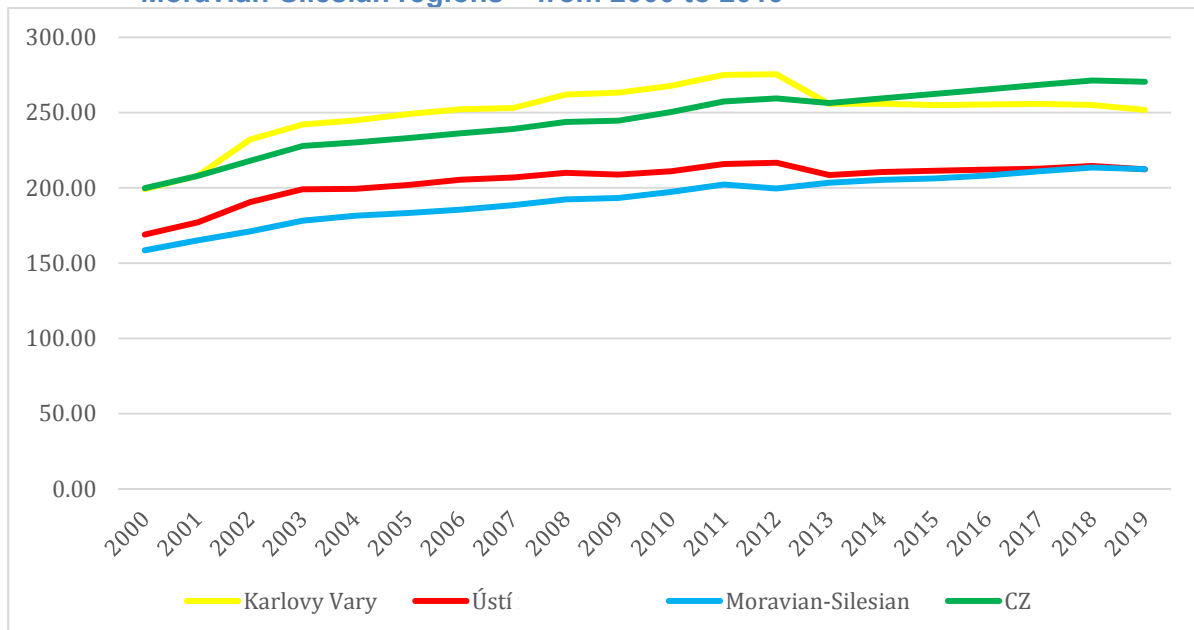
Graph 5: GDP per capita in the Karlovy Vary, Ústí and Moravian-Silesian regions, Czech Republic and the EU in 1995 - 2018



Source: CZSO. (2020). Development of the number of inhabitants in the Czech Republic, Karlovy Vary, Ústí nad Labem and Moravian - Silesian regions in the years 1989 – 2019. Retrieved October 24, 2020, from <https://www.czso.cz/>, <https://data.worldbank.org/>. Gross domestic product in Karlovy Vary, Ústí nad Labem and Moravian - Silesian regions in the years 1989 – 2018. Retrieved October 24, 2020, from <https://www.czso.cz/>

Economically, Karlovy Vary reports the highest number of companies per 1000 inhabitants. Nevertheless, all three regions are under the Czech average (Graph 6).

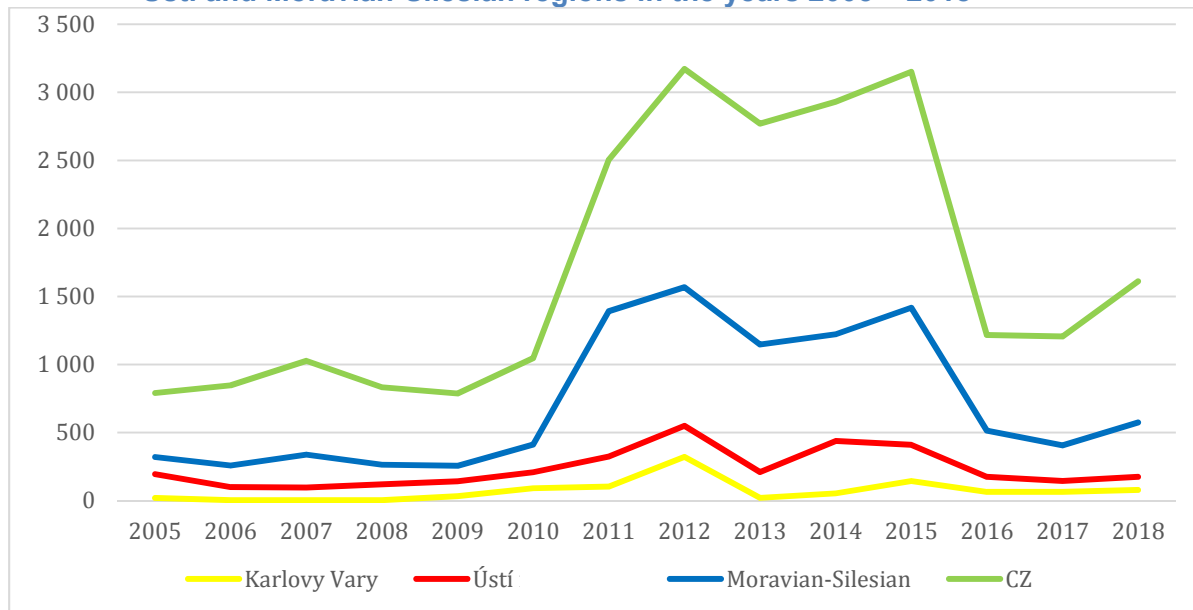
Graph 6: Number of companies per 1000 inhabitants in the Karlovy Vary, Ústí and Moravian-Silesian regions – from 2000 to 2019



Source: CZSO. (2020). Development of economic entities in the Czech Republic, Karlovy Vary, Ústí nad Labem and Moravian-Silesian regions in 2000–2019. Retrieved October 24, 2020, from <https://www.czso.cz/>, <https://cfuc.vse.cz/pdfs/cfu/2014/04/15.pdf>

With respect to **investment into science and research per capita**, all three regions fall below the Czech Republic average. Moravian-Silesian shows some positive trends, but the other two regions are the lowest among all Czech regions (Graph 7).

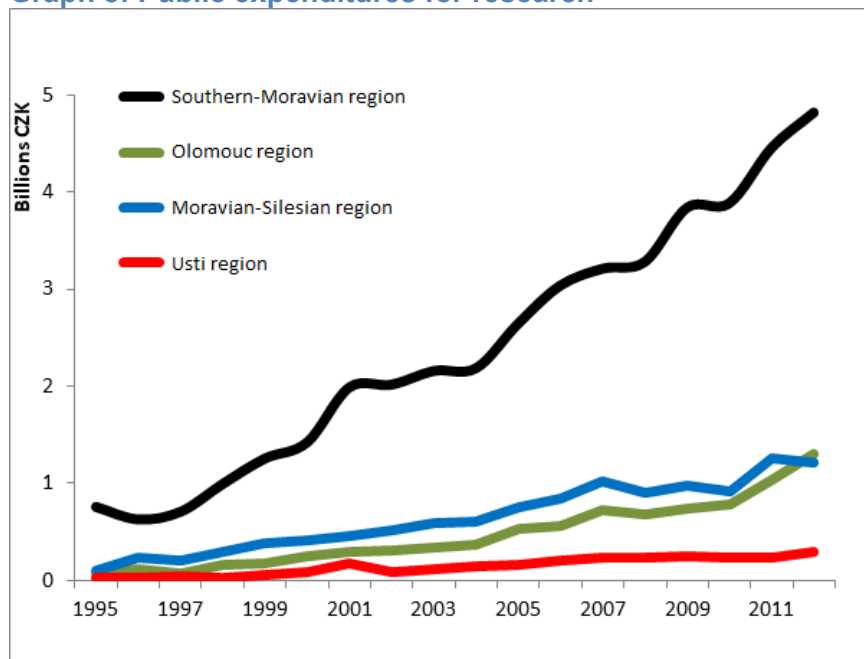
Graph 7: Investment into science and research per capita (CZK) in the Karlovy Vary, Ústí and Moravian-Silesian regions in the years 2005 – 2018



Source: <https://vdb.czso.cz/vdbvo2/faces/cs/index.jsf?page=vystup%20-objekt&f=TABULKA&pvo=VAV02&z=T&katalog=30851&str=v183>

Graph 8 shows the **absorption capacity for research and innovation funding** (1995-2011). The Ústí and Karlovy Vary regions remain among the lowest in the Czech Republic. The Moravian-Silesian region shows an improving trend, which can be partly explained by the amount of public expenditures for research.

Graph 8: Public expenditures for research



Source: Czech Statistical Office and Kříž, R. – Jilková, J. *Hodnocení a analýza výzkumu, vývoje a inovací v ČR [Assessment and analysis of research, development and innovation in the Czech Republic] Studie pro TAČR. 2014.*

Status of Territorial JTPs

With resolution No. 815 of 27 July 2020, the Czech Government instructed the Minister for Regional Development to negotiate with the Council of the EU to expand the territorial scope of the Just Transition Fund. To meet this challenge, the government is working to define a set of clear criteria on the national level that identifies other regions that may be significantly affected by the consequences of the transformation process.

The Territorial Just Transition Plan of the Czech Republic [**PLÁN SPRAVEDLIVÉ ÚZEMNÍ TRANSFORMACE**] was submitted to the Czech Government in draft version 1.3 for informative purposes on 16 October 2020. The current version of the Just Transition Plan of the Czech Republic includes mostly general information and many subsections are still to be completed. The content and structure are derived from the EU JTF regulation proposal, with a disclaimer about the legal uncertainty. No substructures related to the three coal regions are included. Some open issues (legal uncertainty, support for large firms, territorial eligibility, sustainability of jobs supported) are briefly mentioned.

The Czech government might want to compensate for expected job losses, in both the private and public sectors, with support from **large enterprises**. This needs to be justified according to Article 7(2) (h) of the draft regulation. Further expansion outside these regions is only a consideration in terms of thematic focus or on large projects with an impact on the mentioned regions. This topic has recently become a sensitive issue in the public opinion of the Czech Republic due to negative media attention. The subject needs to be analysed and treated with utmost care during the project implementation to justify and propose effective support measures for these actors and the right funding mechanism (oriented towards pillar 2 of the Just Transition Mechanism).

The latest indication is that the Czech Government does not want to use additional funding from the Cohesion envelope for the JTPs and discussion about extending the project eligibility beyond the three regions is still ongoing (information from a follow-up meeting with MoRD, 2 November 2020). In the response to the draft inception report, the Czech government requested the Consultant to review the accuracy of our criteria to assess the eligibility of the three regions (Karlovy Vary, Ústí and Moravia-Silesia) that were defined in the draft of TJTP. In addition, the Government would also like to verify the potential to carry out specific and thematic investments or activities beyond the scope of the three regions mentioned above (e.g. strategic projects that might be carried out - fully or partially outside of eligible regions, and would have a positive impact on the process of just transition in the eligible regions).

Project list - status

The Territorial Just Transition Plan of the Czech Republic (version 1.3) includes an overview of activities in section 2.4.2 (strategic projects, operations/projects and grant schemes), which are organised in three groups per region. According to the MoRD, the list of projects will be updated on a regular basis. The Ministry has prepared project proposal templates for each of the regions that have a different design but are similar in the content requirements.

Table 3 highlights the number of project ideas/proposals that were included in draft version 1.3 of the JTP.

Table 3: Overview on number of projects for the JTPs

Ústí region	120 projects
Karlovy Vary region	93 projects
Moravia-Silesia region	70 projects

Source: MoRD: Transformační platforma – Fond pro spravedlivou transformaci, October 6, 2020

At the meeting of the Transformation platform on 6 October 2020, the methodology for assessment of projects was presented. The proposed criteria include implementation potential (25%), transformation potential (35%), contribution to the energy and climate plans (20%), and employment (20%).

1.3.4 COVID-19 updates relevant for project implementation

Since 5 October 2020, a state of emergency has been declared in the Czech Republic for a period of 30 days due to the worsening situation of the Covid-19 epidemic. On 30 October 2020, the state of emergency was prolonged to 20 November 2020. The restrictions in the Czech Republic⁸ pertaining to the project implementation include:

- **Travel restrictions:** As of 21 October 2020, the Government of the Czech Republic banned the free movement of all persons in the territory of the Czech Republic⁹. Work related travel has so far been permitted. However, all incoming persons have to follow procedures, such as filling out the prescribed forms and being tested upon arrival.¹⁰
- **Contact restrictions:** As of 22 October 2020, a maximum of 2 persons can stay together in public places. The situation has been fluid, and has been developing each week, sometimes even more frequently. The project team will therefore closely follow the recent developments and adapt the work as needed.
- **Work conditions:** Since 14 October 2020, all schools have been closed. In addition, kindergartens close based on the emergence of Covid-19 cases among the students. This has seriously impacted workers with no additional childcare support. Schools will remain closed at least until 20 November 2020.

1.4 Conclusions for the implementation of the Project

Project Context – EU and Czech Republic

- At the time of writing this Inception Report, the current **policy framework** is **under development** both at the EU and national level. Here, constant communication with the Commission about the progress in adopting the EU regulation will be of utmost importance.
- The **COVID-19 pandemic** will continue to affect the economic and social situation in the Czech Republic. The situation is unstable and hard to predict.
- On the one hand, the impact of the COVID-19 crisis, with its disastrous economic and social consequences, has highlighted the lack of resilience of the EU (and global) economies and companies. On the other hand, it has **restructured the political discourse on energy, climate policy, and the phase-out of coal**. The political debate has focused mainly on the management of the epidemic and measures for economic stimulus and recovery. The economic recovery is often perceived as contradictory to the climate transition, without considering the high potential for synergies. Moreover, the massive increase in public debt levels and debt-to-GDP ratios (against the backdrop of the decision to pause the stability and growth pact) all but annihilates the future fiscal space needed to support the just climate neutral transition. The MFF, the JTF, RRF and the Modernisation Fund represent what is left in terms of fiscal space for this purpose. This needs to be considered during the stakeholder consultation process and the potential of green investment to boost innovation, productivity and employment and achieve a just, green and sustainable recovery.
- There are a **number of financing agreements and operational programmes that are still under development**. Although the material also contains information on the possibilities of implementation of the second and third pillars of the Mechanism for Just Transition in the Czech Republic in the programming period 2021-2027, these are not yet decided at the EU level. However, these are of utmost importance for market-driven solutions of the transition such as projects to support large enterprises.
- **Digitalisation and AI/ML:** The development of automation and **AI is advancing quickly in Czech Republic** and the long-term nature of the JTPs requires consideration of the application of digitalisation and the potential of AI/ML to develop **transition strategies**. The application of AI and ML could help the **dynamic modelling** of policy impacts; enable, measure, and operate more sustainable electricity systems; and optimise and improve transportation, while facilitating the shift towards smart buildings and smart cities. We have identified several use cases for AI/ ML in priority areas for Czech Republic Just Transition Plan such as:

⁸ <https://koronavirus.mzcr.cz/>

⁹ https://www.mzv.cz/jnp/cz/informace_pro_cizince/aktuality/krizove_opatreni_cesty_jen_v_nezbytne.html

¹⁰ https://www.mzv.cz/jnp/en/information_for_alien/news/before_you_travel_step_by_step_guide_on.html

- Sustainable electricity systems
- Optimisation and improvement of transportation
- Facilitating the shift towards smart buildings and smart cities
- Improving industries (e.g. optimisation and prescriptive features), reducing overproduction, and predictive maintenance for the use of cleaner electricity
- Precision farming
- Forests monitoring

RE:START, START and other support programmes

- There are a **number of programmes targeting the three transition regions specifically**, RE:START that covers measures from several Ministries, the Modernisation Fund, the START project, EU structural funds programmes and Technology Agency Programmes. These need to be properly mapped and overlaps need to be further analysed. As this is an ongoing and dynamic process, the Ministry of Environment is monitoring and working on it and the first draft of overlaps has been delivered to the Consultant. However, further discussions with other Ministries need to be planned.
- The **absorption capacity** for the use of financial sources from operational programmes of the three coal regions is in accordance with the national average. However, as indicated during the inception phase, there is a need to increase the local and regional capacity, which is particularly important for the implementation of the TJTP.
- The overall regional characteristics qualify the three regions for **investment incentives to support direct investments**. Regarding the three regions, Ustí is the most successful region in Czech Republic with respect to both number of investment projects received and investment per capita (Table 4). However, the latest amendments to the investment incentives from September 2019 target the up-skilling and re-skilling of people with university degrees, not large-scale investments that create jobs for candidates with a lower level of education, which is to be expected from the coal phase-out.

Table 4: Investment incentives coal regions, number and amount

	Number of investments received	Amount of Investment per capita
Ustí Region	31	25,920 CZK
Karlovy Vary region	4	6,103 CZK
Moravia-Silesia region	26	8,308 CZK

Note: 1 EUR equivalent of 26.2 CZK (September 2020)¹¹

Transition Regions, including status of the Territorial JTPs and potential project lists coordination for Environment/Energy/Economy

- Although the regions have a lot in common, there are also substantial differences and particularities such as:
 - **Population:** Moravian-Silesian is larger than the other two coal regions combined. However, since 1989, the population of this region decreased from 1,3 million to 1,2 million. The population of the other two regions remained stable during this time.
 - The **unemployment rate** in all three regions has followed a similar pattern since 1989: Karlovy Vary kept the unemployment rate relatively low in years 1994–2008. Since 2008, this difference disappeared and in recent years, the unemployment rate in Karlovy Vary has increased faster than in the other two regions.
 - As for **GDP per capita**, all three regions lag behind the EU and Czech Republic average, with slightly better performance in Moravia-Silesia.
 - The economically weakest region of Karlovy Vary shows highest **number of companies per 1000 inhabitants**. Nevertheless, even this region is under the Czech average.
 - Regarding **investment in research and science per capita**, all three regions show weak values in comparison to the Czech average. The Moravian-Silesian region still shows some positive trends, but the other two regions rank lowest in the country.

¹¹ https://ec.europa.eu/info/funding-tenders/how-eu-funding-works/information-contractors-and-beneficiaries/exchange-rate-infoeuro_en

- The **absorption capacity for research and innovation funding from a long-term perspective** is low compared to other regions in the Czech Republic. The Ústí and Karlovy Vary regions remain among the lowest in terms of performance and absorption in the Czech Republic. The Moravian-Silesian region shows a trend of improvement, but still reports lower performance dynamics compared to top regions like Prague and Southern Moravia
- The **initial matrix on the situational snapshot on the regions** (taking several key categories and expert judgement for “Economy, entrepreneurship and innovation”: aging population, lack of diversification, innovation, “Employment”: unemployment, unskilled workers, “Sustainable environment”: air pollution, contaminated production sites, negative impact on health and lack of GHG free energy as well as for “Mobility and interconnection”: lack of infrastructure and mobility), which need to be considered and further expanded and developed some indicators.
- The Territorial Just Transition Plan of the Czech Republic [**PLÁN SPRAVEDLIVÉ ÚZEMNÍ TRANSFORMACE**] was submitted to the Czech Government in the draft version 1.3 for informative purposes on October 16, 2020. The current version of the Just Transition Plan Czech Republic includes rather general information, many subsections are to be filled. The content and structure are derived from the EU JTF regulation proposal, with the disclaimer about the legal uncertainty. No substructures related to the three coal regions are included. Some open issues (legal uncertainty, support for large firms, territorial eligibility, sustainability of jobs supported) are only briefly mentioned. The Deliverables 2, 3 and 4 of the present Project are directly linked with the information required and thus will provide key inputs to the Czech Government to further develop its Territorial Just Transition Plan relevant for the application to the JTF.
- The Government of the Czech Republic, in cooperation with the regions, has been collecting **Projects** although the detailed challenges and needs that leads to the priority investments for the three regions are not yet decided. As this is an ongoing process, we propose assistance to MoRD in its coordinating role of collecting the projects and how to manage the project database as part of our activities related to Task 4.
- **Covid-19 situation:** With respect to the ongoing restrictions in the Czech Republic about the epidemic situation in connection with Covid-19, there may be several consequences for the work of the project team. First, all meetings in the foreseeable future will have to be held online. This may have impacts on the attendance of the meetings, especially in case of stakeholder workshops. Second, some of the anticipated activities may face delays due to e.g., shortened office hours and the (short-term) unavailability of the stakeholders due to family and health reasons. The team will therefore pay an increased attention to the planning of all the activities to minimize the impact of the current epidemic situation on its work and outcomes.

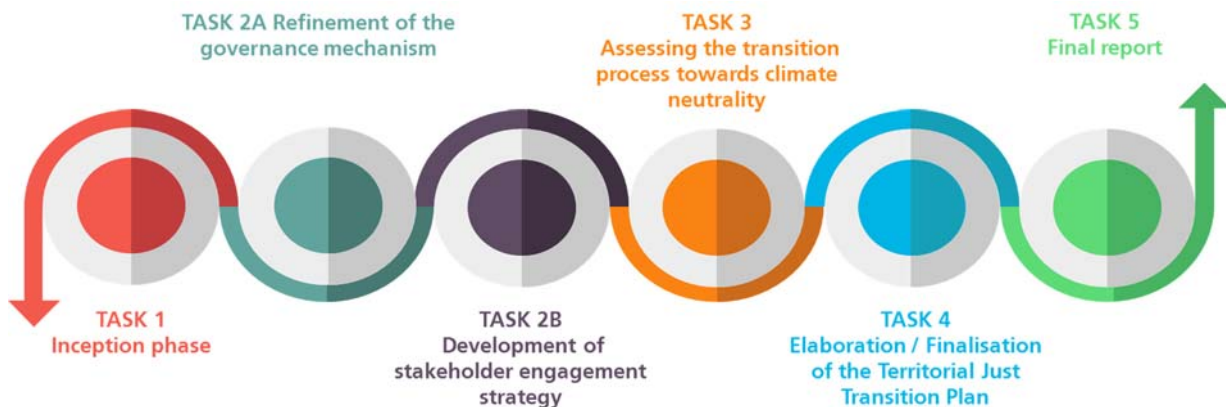
2. APPROACH AND METHODOLOGY

2.1 Overview

Our approach is structured into five main tasks (including two sub-tasks (2A and 2B) under Task 2) that will build on each other and follow the Terms of Reference (ToR). The Project Roadmap (Figure 4) outlines the elements of our work in supporting the Czech Government in the elaboration of the Territorial Just Transition Plan for the three coal regions.

The actions and outcomes in the above tasks will lead to five deliverables (D):

Figure 3: Project Road Map



1. Inception Report (refine the methodology, perform a preliminary stakeholder mapping and assess available data sources) (D1);
2. Prepare a report on governance mechanisms and stakeholder involvement (D2);
3. Prepare a report on the main technical elements for the transition process at the national level, providing the evidence base for the identification of the territories most negatively affected (D3);
4. Prepare a detailed report for the most affected territories (Ústí, Karlovy Vary and Moravian-Silesian) that outline their challenges and needs, including the mitigation of the socio-economic impact of the transition towards climate neutrality that (D4);
5. Present lessons learnt and recommendations in a final report (D5).

2.2 Activities carried out in the Inception Phase (Task 1)

Organising the kick-off meeting

The contractor organised the **kick-off meeting** with over 40 participants from the Commission, the Czech Government and the Frankfurt School project team. Activities included the invitation, agenda and a power-point presentation to facilitate the discussion. The meeting took place through video-conferencing via MS Teams on the 19 October 2020. Kick-off meeting minutes (Annex 1 for presentation) were circulated among the participants and are reflected upon in this Inception Report. The minutes will be updated for the final version of the Inception Report as feedback is still being collected until 9 November 2020.

Preliminary stakeholder mapping, ongoing support programmes

Refer to preliminary stakeholder meeting under Task 2B below.

The **mapping of ongoing support programmes** started but will continue in the coming months as many of the programmes are currently being approved or in a draft version (e.g. the draft of Structural fund OPs for 2021 and RRP etc.). To date, we have received feedback in the meetings as mentioned before and have started a summary exercise as reflected in sections 1.3.1 (EU support) and 1.3.2 (national programmes) and refer to Task 3 below. In the future, and especially before finalising Task 4 (Elaboration/Finalisation of TJTP), we will compare the planned activities (of the TJTP) with the ongoing programmes to identify synergies and avoid duplication of efforts.

Inception Report Writing

The present Inception Report provides a contextual update, sums up the activities of the inception phase, and gives a status and timeline of the Project. The status update includes amplifications of the scope and implementation planning, namely the inclusion of activities related to post-inception (AI/ML workshop, update of project analysis based on the most recent data available), AI/ML, project screening support. These changes are duly detailed in the relevant task descriptions.

Special focus: AI/ML considerations

Our objective is to use AI/ML to accelerate the shift from a central, coal-based heat and power production **towards decentralised** renewable energy generation as part of the TJTP. We propose to do this by addressing the following key issues:

- Analyse **use cases** for technology and data driven approaches in transition in selected sectors and regions;
- Analyse **data stock and data quality** for Transition; and,
- **Smart dashboard** for monitoring transition.

During the kick-off meeting, participants from different stakeholder groups expressed interest in a technical follow-up meeting on the topic of AI/ML. To prepare the meeting, our experts are identifying AI/ML digitalisation opportunities for the JTF. To achieve this, our experts plan to host a focus group and one-to-one interviews to:

- Review use cases for technology and data driven approaches for transition in selected sectors;
- Map out data quality and data stock for decision-making. We will look at both big data and smaller relevant data; and,
- Envision how to implement data-driven adaptive plans for strategic regional planning based with predictive and prescriptive features using machine learning.

Output: Validation workshop with AI Digitalisation opportunities for smart transition (to include in the final Inception Report)

Document Requirements: Any documents on shift from a central, coal-based heat and power production towards decentralised renewable energy generation and document on AI and/or digital transformation at regional level can also be useful.

2.3 Status of Task 2 to Task 5

2.3.1 Task 2a: Governance Mechanism

Inception Phase findings: Feedback from MoRD suggests that the RE:START strategy is separate and more complex than JTF; it runs in parallel and its structure is used to share information about the JTPs, but the CZ government does not see it as an optimal organisational structure because the RE:START strategy has several additional fields. As a result, a simpler structure is needed for the JTP/F. However, the MoRD wishes to build on existing structures and has already included a proposal in the draft document of the TJTP (below). On the other hand, the Commission expects a fresh look at the governance mechanism.

In the Inception Phase, we performed a stocktaking and preliminary analysis of existing governance structures and mechanisms that might be relevant for the design and implementation of the TJTP for the Czech Republic. For this purpose several activities took place:

Information provided and discussed at online events:

- October 10, 2020: Perspectives of the Czech and European energy sector
- November 23, 2020: Economic aspects of the phase-out of electricity production from coal.

The issue of transition of coal regions and its support is typically inherent element of events focused on energy issues.

Stakeholder interviews (online):

- November 18, 2020: MoRD – Milos Soukup (RE:START and JTP)
- November 2020: several working meetings with Ms Nekořová and Mr Tichý of Economic and Social Council of Ústí region - ESCUR <http://www.hsr-uk.cz>
- November 25, 2020: Lovochemie (chemical industry)
- December 1, 2020: MoE – Jan Hlaváček (JTP)
- December 1, 2020: Seven (electricity and heat producer)

- December 2, 2020: Unipetrol (chemical industry)

And a meeting with Pavel Zamyslicky from MoE is still pending and will be included for the report of the Deliverable 2.

Governance – further findings:

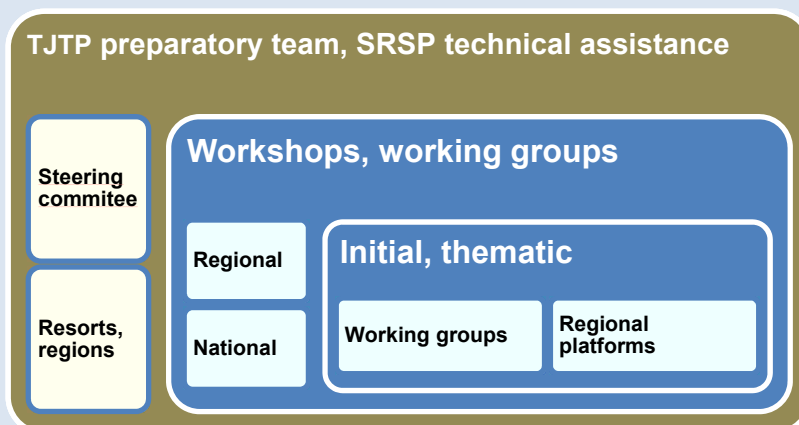
- The decision about the shared institutional structure of JTF implementation (MoRD and MoE) was partly surprising for the executive staff, but they put all possible efforts to manage;
- The teams of MoRD and MoE are intensively involved in programming activities, for the information of stakeholders are lacking capacities. Both teams are aware of this situation;
- The programming teams are aware of the importance of real „transformation story“ based on diversification, but decarbonisation is more visible and understandable;
- There are differences in the progress and strategic vision related to JTF preparation (MSR more advanced than UTK and KVR);
- MoE and MoRD have no systematic analysis about the transformation strategies in the business sector.

The draft document of the JTP (v 1.3) proposes a simple partnership programme as follows:

Textbox 2: Draft proposal for the Governance Mechanism of the JTP

The PSÚT (TJTP) preparatory team, which methodically leads the MoRD, was nominated for the elaboration and coordination of the elaboration of the TJTP of the Czech Republic (Figure 5) below:

Figure 4: Draft proposal for the JTP



Steering committee - composed of representatives of the EC, ministries and affected regions

- Coordination of activities in accordance with the FST Regulation and related documents
- Coordination of the provision of technical assistance.

Preparatory team - representatives of regions, ministries, the Office of the Government of the Czech Republic

- Coordinates activities in regions, projects outputs from activities in regions into PSÚT
- Coordinates the cooperation of ministries and regions and outputs from the "Transformation Platform"
- Finalises documents for the Government of the Czech Republic
- Links outputs from regions with valid legislation, interconnection with the MA and the form of the new programming period

"Transformation Platform" - representatives of ministries, regional stakeholders (NGOs, companies, local governments, representatives of regions)

- Defines expectations from the transformation process
- Defines activities leading to the fulfilment of these objectives
- Activates the territory
- Monitors the development of type activities over time
- The role of regional stakeholders is key

In parallel with the transformation platform, the preparation of the program is also addressed through thematic working groups, in which representatives of individual ministries and representatives of regions participate. The following working groups are set up

1. Business, science, digitization
2. Energy savings, renewable energy sources, transport
3. Circulating economy, reclamation
4. Employment

This two-stage discussion ensures that no relevant partners are left out and that everyone has the opportunity to comment. Following comments and suggestions from members of the platform, bilateral negotiations with individual managing authorities and other partners also take place.

In addition, the partnership principle is also applied at the regional level in the preparation of a plan for a fair territorial transformation. Regions must ensure a sufficiently transparent involvement of all relevant actors in the territory in the preparation of plan and the proposal of appropriate measures for inclusion in the support from the Operational Program Fair Transformation.

Once the programme has been approved, the transformation platform will be transformed into the monitoring committee of the operational program and will perform all the functions arising from the regulation.

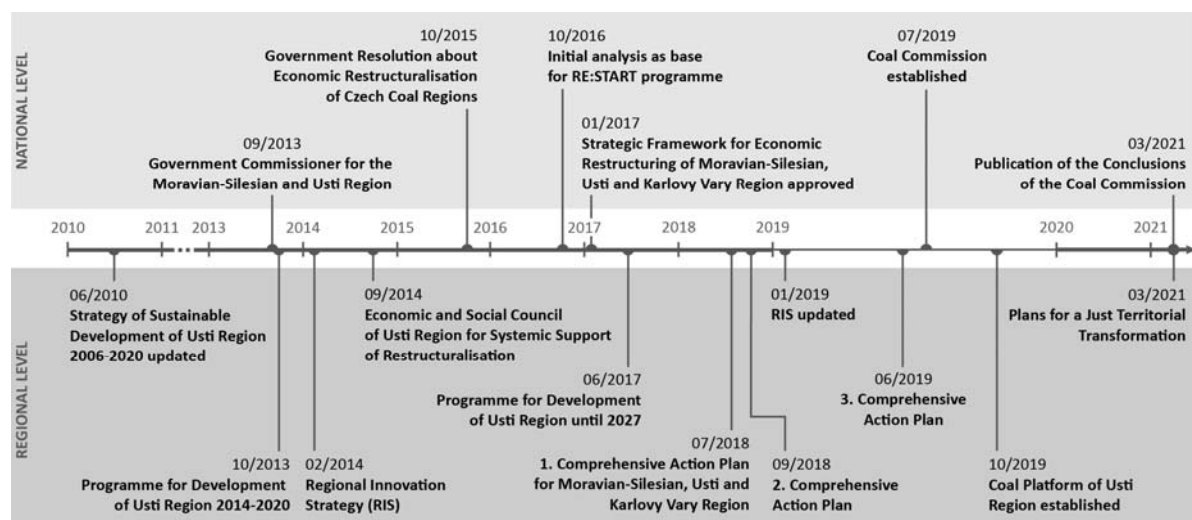
The governance mechanism related to the Just Transition could be further developed taking into account the following basic tracks:

a. Strategic planning in regions

The strategic documents at the regional level correspond with the programming periods of the EU as financing from the European Structural and Investment Funds is a key source of funding for Czech regional policy. The topic of the transition to a low carbon economy gradually penetrates regional strategic documents. While this process was usually not considered in the document for the programming period 2007–2013, the strategy for the programming period 2014–2020 already mentioned uncertainty regarding further development coal mining and energy concept of the state as one of the threats for regional development. This uncertainty is highlighted intensively in the strategic documents for the programming period 2021-2027.

Similar differences exist in the proposed measures and priorities. While the first edition (2007-2013) mentions general support for innovations and competitiveness, in the next two periods it is clearly placed in the context of environmental and infrastructure sustainability, including the measures for decarbonisation and diversification. The key governance platform in the regions is the **Regional Standing Conference** [Regionální stálá konference], which includes multi-sectoral regional, social and economic partners. Important partners on the national and regional levels are the regional bodies of social dialogue - **The Economic and Social Council** [Hospodářská a sociální rada], which acts as a format for trilateral negotiations (public authorities, employers and employees) on the legal basis of the Act on employment (435/2004 Col.).

Figure 5: The indicative timeline of regional planning



Source: Matern, Špaček, Jilková et al., Strategies for energy transition and regional development approaches in European post-coal mining regions – the examples of Ústí Region, Czechia and Lusatia, Germany, 2030

Support for the region's innovation potential in relation to the ongoing economic transformation is elaborated within the **Regional Innovation Strategy** (RIS – Regionální inovační strategie). The

managing authority for the RIS is the **Regional Competitiveness Council** [Krajská rada pro konkurenceschopnost], an advisory body of experts from business, researchers and public sphere, and a RIS3 manager who is responsible for executive management (appointed in coordination with the Ministry of Industry and Trade as the national RIS3 coordinator). At the regional level, project developers are active in developing innovation projects to support the implementation of the RIS.

b. RE:START strategy

The current RE:START implementation structure has been established to support the restructuring process in the three structurally affected regions. It is described in Section 2.2. In the institutional setting and staffing structure, it partly overlaps with the governance structures for strategic planning in the regions.

c. Transformation platform and structures for JTF implementation in the Czech Republic

The Transformation platform was established to encourage discussion and consultation for the preparation of the Just Transition Plan of the Czech Republic. Its first meeting took place on 6 October, 2020.

The institutional members of the Transformation Platform are identified. They each nominate individual representatives. According to the MoRD, this list is evolving as stakeholder interest increases for the Just Transition Plan. Some members of the Transformation Platform are members of the Coal Commission of the Czech Republic or of one its three working groups. In some, a mirror structure of the central Coal Commission was established (in Usti, for example, it is called the *Coal Platform*).

By September 2020, four working groups of the Transformation Platform were established and held meetings (WG1: Entrepreneurship, research, and digitalisation, WG2: Energy savings, renewables, and transport, WG3: Circular economy and remediation, WG4: Employment). Discussion in the working groups **primarily focused on the overlaps between the Just Transition Fund and other programmes**. The Ministry of Environment has distributed analytical material on this topic. The implementation structure for the CZ Just Transition Plan was presented to the Transformation Platform with the Ministry of Environment as Managing Authority and the State Environmental Fund as Intermediate Body.

This new governance structure of the Transformation Platform can be considered as an innovative element bringing together a broad range of actors. Operating at the central level, it is supported by the Czech government (MoRD), which provides the organisational service for the meetings of the Transformation Platform and its working groups. In the three regions, a working governance structure was designed according to the legislative framework of the regional policy of the Czech Republic. The RE:START governance framework is legally based on the governmental resolution (which determines its legal status as minor in comparison with the overall regulatory framework of the regional policy of the Czech Republic).

Table 5: Comparison of three main governance mechanisms of relevance for the just transition agenda

	Regional planning structure	RE:START structure	Transition platform + structure for JTP implementation
Legitimacy	Act on the support of regional development	Governmental resolution	Joint decision of MoRD and MoE
Stability of existence	Established post 2000	Established in 2014 and operating since 2017 with Action Plans	Established in 2020
Level of decision process	Central government + all 14 regions in the Czech Republic	Central government + 3 coal regions	National government and regional governments
Involvement of regional actors	Multi-level structure	Multi-level structure	Regional actors are members of the Transition Platform
Resolution of potential conflicts between the sectors	On the regional level possible	On the regional level possible	On the central level
Coordination of different levels	Established structures and processes	Ad hoc decisions	Transition platform as negotiation platform
Involvement of business and NGOs	Institutions of social dialogue relevant mainly on the regional level	Via regional planning structures	Social partners (business, trade unions) and NGOs are members

Involvement of research and education institutions	On the regional level	Via regional planning structures	Innovation centre of Ústí region (representing the Ústí university too)
Relation to scope of TJTP	Regional focus	Broader scope than TJTP	Focusses on TJTP

All three governance mechanisms have strengths and weaknesses, partially overlap, and have potential for cooperation. Based on the mechanisms described above, we suggest developing a proposal for the governance mechanism of the TJTP based on the existing structures in the Czech Republic. Since the TJTP is not fully developed, we may need to revert back to this task throughout the project and provide updates so that a sustainable medium to long-term governance structure can be established. To ensure policy coherence, a regular exchange with the European Commission's services involved in the relevant governance processes and other projects working on the TJTP development in other EU Member States will be necessary.

We will also benchmark our proposal with good practice examples from other EU projects after validating their applicability and efficacy in other countries.

Reporting and smart dashboards

A central element of sound governance includes the information system. Here, we propose **smart dashboards for monitoring and evaluation** of the planned measures with the presentation of some representative use cases/best practices. To achieve this, we will:

- Review existing dashboards; and,
- Make proposals for data driven dashboards with predictive and prescriptive features.

Planned activities include:

- One focus group to review existing tools in use and present best practices for dashboards; and,
- One workshop to present options for a Smart Dashboards for the JTP in Czech Republic.

Output: Design proposal of smart dashboard (presentation and report)

2.3.2 Task 2b: Preliminary Stakeholder Mapping / Engagement Strategy

Inception phase findings: The Frankfurt School project team received valuable feedback during the kick-off meeting, through access to further information from the Czech government's SharePoint (e.g. the stakeholder lists from MoRD compiled by the project), as well as follow-up meetings with DG REFORM, REGIO and EMPL (30 October 2020) and the Czech Government (MoRD) on 2 November 2020 and through bilateral follow-up communication with the Czech Government and the Commission.

The inception phase analysis confirmed relatively low levels of information about the JTF among stakeholders. The current project list indicates the extent of the problem. The potential project developers have rather vague information about the priorities of the just transition and other potential funding sources. This can be partially attributed to the many uncertainties in the JTF regulation. Thus, as JTF projects are submitted, ideas and intentions call for collection of project ideas without profiling according to JTF specific requirements.

The current stakeholder identification and structure/mapping relies on organisations/persons from:

- RE:START Strategy
- Strategic/regional planning
- ITI (integrated territorial investment)
- Municipalities - actors, collaborative structures
- Transformation platform

Based on the gaps and challenges regarding stakeholder involvement identified in the three coal regions, we will develop a stakeholder engagement strategy.

The stakeholder mapping can build on the stock-taking and preliminary review of existing governance structures and mechanisms that might be relevant for the design and implementation of the Territorial Just Transition Plan of the Czech Republic, which have shown that:

- A coordinated process of regional planning with a focus on innovation is ongoing in all regions of the Czech Republic, which has resulted in the update of the Regional innovation strategies 2020 and has been approved by regional governments.
- Project activities have been coordinated and the core RE:START strategy is in place (2020 – updated Action plan submitted to the Government) for the three coal regions. The ITI programming started last year.

- The governance structures include various platforms and working groups, which mobilize actors and promote project development. We can obtain relevant lists of participants and stakeholders.
- The Transformation platform covers a range of important institutional members, which represent stakeholders on the national, regional and local levels.

Most of these structures and institutions have their own networks and facilitate regional networking. After a preliminary stakeholder mapping, we can conclude that there are various stakeholder umbrella structures and institutions representing a broad range of firms from the private sector (including consulting firms), municipalities, public authorities, innovation centres, social partners, civil society (NGOs) and academia. The representatives of these institutions declared a willingness to share lists of individual contacts and support the project team with stakeholder identification and engagement. It makes operative use of the snowball method to produce a robust stakeholder list.

Further an analysis of websites and social media took place for MoRD, MoE and RE:START with the following outcomes:

- More information support for small players (municipalities, small business, NGOs) is needed;
- The websites of MoRD and MoE provide no information about the Just Transition and Just Transition Fund;
- MoE has simple, but informative website about Modernization fund - https://www.mzp.cz/cz/modernizacni_fond;
- The website of RE:START is comprehensive and provides well-structured information about the RE:START strategy, but no information about the just transition;
- No strategic concept for information flow related to just transition in place.

For the stakeholder engagement strategy, together with the Beneficiary, we would specify:

- » The **Purpose of stakeholder engagement**: in our view, stakeholder engagement accumulates information and assesses stakeholder interests and mobilizes them towards an active project development.
- » **Instruments of stakeholder mobilisation**: we consider following basic instruments for stakeholder engagement:
 - [Website with an interactive instrument for communication with stakeholders](#)

A website is a key platform for a large group of stakeholders to effectively communicate. Subject to further discussion, we recommend the RE:START platform for this purpose with any necessary modifications. According to the MoRD, a website update to include information about the JTF has already started.

- [Virtual workshops](#)

Virtual workshops have become a standard instrument of communication in Czech society and most stakeholders are acquainted with various online communication instruments. The MoRD has already indicated that they are planning webinars.

- [Physical meetings \(workshops\)](#)

We recommend organising the workshops after opening the interactive website and a series of virtual workshops. This would allow us to identify key players in innovation activities and work more closely with them. Due to COVID-19, these activities can only be planned from 2021 onwards.

- [Information support](#)

The design of an interactive website (that permits two-way communication, including the collection and discussion of project ideas). This website should also include examples of best practice. The model of a one-stop-shop is highly recommended and is further developed in Deliverable 2.

The elaboration of a leaflet containing comprehensive information about the just transition (fund and planning) in non-technical language is currently under preparation.

2.3.3 Task 3: Assessing the transition towards climate neutrality

Task 3 will describe the decarbonisation process at national and regional level. It will assess the main impacts of transition towards climate neutrality both at national and at regional level. It will specifically focus on the potential restructuring in different sectors and impacts on employment for the most affected territories (including potential re-skilling and upskilling needs, etc). It takes into account the current sectoral structures and related GHG emissions. The top-down global modelling approach (on national and more specifically at regional level) is complemented with bottom up, qualitative analysis based on structured interviews with stakeholders. The analysis also assesses the structure of investment, the compliance of the investment with EU taxonomy, and the availability and sufficiency of support programmes and financial instruments.

The inception report then only highlights the major issues and approaches to implementing the report. **Inception Phase findings:** We have identified several points to mention related to methods and course of actions to deliver Task 3 as follows:

Initial analysis and desk research

First, the team will **assess the existing strategic documents** and reports – in close cooperation with the MoRD – to analyse the current status of development of the JTP and underlying analyses (refer to Section 5 about the timing (workplan and the project monitoring indicators). To this end, the MoRD has shared the current status of the TJTP preparations. So far, the **draft TJTP does not include specific milestones** and only **refers to the climate neutrality transition and NECPs in general terms**. The NECP, which was submitted in January 2020, does not yet reflect the target of climate neutrality.

It is important to keep in mind that the current **policy framework is under development** at the time of writing the Inception Report and most likely during the Task write-up (both at EU and national level). At the national level, the preliminary conclusions of the Coal Commission will serve as one of the main points of reference – the decision on the coal phase out (and thus a major step towards climate neutrality) is expected to be made at a later stage.¹²

There is the **ongoing work on Recovery and Resilience Plans**, which also represents a strong degree of uncertainty. The first draft of RRP was prepared in October 2020. The team has reviewed the first draft and will include the relevant information in its work. The same applies for the Modernisation Fund as an important feature of the policy framework, and the implementation of ESIF in the MFF 2021-2027.

The desk research also includes the **existing status of investment needs** (based on European Semester, NECP and other reports). The team will identify potential gaps in data, methodology, and sectors covered. The task will critically assess the assumptions behind the existing investment needs analyses by the start of January 2021. The results of this analysis will serve as input for further assessment and JTP preparation. The task will further assess the current structures and sources of funding the investment needs.

National and regional impact analyses will be carried out in close coordination with Cambridge Econometrics. The data is currently being gathered in coordination with the needs for Task 4. Data requirements from Task 3 for E3ME modelling are in Textbox 3 (refer to the template in Annex 5):

¹² <https://oenergetice.cz/uhli/brabec-uhelna-komise-v-utery-o-datu-ukonceni-vyuzivani-uhli-v-cr-nerozhodne>

Textbox 3: Data requirements for E3ME modelling

List of policy instruments to be included in the decarbonisation (Green Deal) scenario, which CE can use to derive the actual data needed for modelling. To provide some examples:

- Transport policies: e.g. biofuel mandate (introduction time, magnitude); road tax (introduction time, magnitude)
- Heating policies: e.g. spending on retrofitting and effectiveness (introduction time, spending and effectiveness – or just spending, or just reduction of energy consumption, we can use source from the literature to assume other factors)
- Energy policies: e.g. capital subsidies (amount, time of introduction), government infrastructure investment (e.g. to grid)
- Energy policies II: feed-in-tariff (or premium, expected magnitude and technologies applicable)

Then, our experts are collecting further inputs for disaggregating the results:

- Historical time-series are needed (on NUTS-3 level, optimal would be at least broad sectoral level for all):
 - GVA / output (available from Eurostat up to 2017)
 - Employment (available from Eurostat up to 2017)
 - CO2 emissions (available from JRC for 2015, 2020, 2030)
- If for disaggregation a more advanced method (i.e. shift-share analysis with ARIMAX modelling) is chosen, data requirement could increase, including proxy variables and historical data in with different dimensions (e.g. national, sectoral)
- All data NUTS-3 level with the most detailed sectoral disaggregation possible
 - CO2 emissions
 - GVA / GDP
 - Employment
 - Population projections

During the Inception Phase, we have explored the status of the **relevant impact assessments** that may have been carried out by either the Coal Commission or MoRD (e.g. in the stakeholder workshop in the Moravia-Silesian Region on 6 March 2020). The impact analysis in the current draft of TJTP is of a more descriptive nature and will be used as the basis for our analysis.

With respect to data collection, **the availability of public data** is one of the primary challenges. For instance, companies are required to publish many indicators (e.g. profit or turnover), but many company variables are not published (e.g. employment of people with low education level). Moreover, there are different time frequencies for collected data. For instance, the Czech statistical office conducts a national survey to calculate the population every 10 years. This frequency may not be compatible with other national methodologies of data collection. Thanks to their experience, the team will deal with the potential data and analytical challenges using verified mathematical ways to maintain methodological correctness and practical applicability of the quantitative results.

The impacts on other territories from the just transition in the three regions, will also be assessed, in particular through changes in the production, distribution and value chain of energy systems.

The MoRD has submitted a preliminary list of projects to be financed by the JTF. Under the activities of Task 3, the team will carry out an analysis of the project alignment with the priorities as set out in the proposed regulation on JTF. See the preliminary analysis in Task 4.

AI/ML considerations

Based on the preliminary analysis and subject to the workshop organised on 26 November 2020, our AI/ML experts reviewed the potential of AI/ML to support the transition to carbon-neutrality in the regions. In order to develop this further, we will prepare a use-case landscape and a smart transitional roadmap, including:

- Use cases in the key sectors defined by the JTPs;
- Illustrate most relevant use cases that leverage economic impact metrics for adoption; and,
- Conduct a focus group and one-to-one interviews where necessary to develop a report on the use case landscape by sector.

Preliminary content of the Task 3 Report

The preliminary content of the report follows the structure suggested in the technical proposal, with some minor changes. Mainly, we will not include the bottom-up review as a specific chapter, but rather as a part of the regional impact assessments based on the survey and series of interviews (see also stakeholder involvement). Refer to Annex 6 for the updated content outline of the draft report.

Challenges and limitations

The availability of stakeholders for the interviews and regional workshops is a key challenge due to the epidemic and related impacts (see section 2.4). Most of the interviews and roundtables are likely

to be carried out online. However, delays are foreseen in arranging the interviews due to the potential unavailability of stakeholders (due to health, family engagements, reduced office hours, etc.).

Regional data is also a challenge, in particular limitations to assess the regional impacts of JTF. We will assess the availability and gaps regarding regional data (NUTS-2 and NUTS-3).

We foresee that not all data will be available to conduct an **investment needs analysis**. It may be beyond the scope of the project to carry out the investment needs analysis; however, we will indicate the data gaps and make recommendations.

Due to the ongoing process of iteration of the **policy and strategic framework** for climate neutrality in the Czech Republic, the expert team will need to continuously adapt all activities, which may go beyond the scope and timeframe of the project.

2.3.4 Task 4: Action Plans for the territorial transition

In the draft document of the Just Transition Plan v1.3, there are no sub-structures related to the three coal regions. Some open issues (legal uncertainty, support for large firms, territorial eligibility, sustainability of jobs supported) are only briefly mentioned. The development of the action plans and roadmaps are almost non-existing. Further attention needs to be devoted to regional innovation and SME development. Another important issue is that the related legislation is currently in the process of development and carries a risk of late or insufficient legislative background.

D4: Report on the challenges, needs and (smart) action plans for the most affected territories

The second part of the Annex 6 includes the contents for the Draft Report of Deliverable 4 (Report on the challenges, needs and (smart) action plans for the most affected territories of the Czech Republic) that describes the main technical elements for the transition process at each of the three Transition Regions providing the evidence base for the Report on the challenges, needs and action plans of the most affected territories.

Here we would like to highlight the importance of taking a deep dive into the **assessment of the transition challenges** for each respective region separately. In order to cluster the topics, we suggest to, in addition to the core dimension (environmental, economic and employment), add in principle and based on the stakeholder engagement strategy (D2) the political-administrative, socio-cultural and digital/technological levels (including the smart specialisation and transition for the collateral field affected such as innovation, education, research, existing skills). This would allow for understanding and contextualising the entire regional setting and provide the needed information to ensure that a long-term relevant action plan as required will be operationalised. As we are providing a long-term outlook, we need to ensure that the activities have a certain logic and develop a coherent territorial (smart) transition strategy for each region based on a SWOT Analysis: It will integrate the key findings of the assessment of the transition challenges, separating the intrinsic values and difficulties of the specific region (i.e. factors which policies cannot change, being characteristics of the area) from the extrinsic elements which can positively or negatively affect the development of the region and which can be influenced by future policies and programmes to be implemented in the specific region).

The **central part of the report** refers to **the establishment of an action plan with a road map of specific measures to be undertaken up to 2030, in line with EU objective to reach climate-neutrality by 2050**. The point of departure is the examination of the areas identified for action in Annex D of the 2020 country report for Czech Republic with a view to striking a balance between diverse fields for future support under the JTF.

In order to avoid duplication of efforts funded by the EU and at the country level and to avoid inconsistencies between different programmes, the report will include an assessment of synergies and complementarities with other programmes (e.g. the pillar 2 and pillar 3 of the JTM, other EU programmes and funds (e.g. Cohesion Policy and Fund, SURE, recovery and resilience mechanism, NECP, the upcoming Modernisation Fund etc.) to address identified development needs and with regard to the transition to a climate-neutral economy as well as the consistency of the proposed actions at the country level (with other national, regional or territorial strategies).

Preliminary review and analysis of the project lists

Related to the **project lists** (refer to Section 1.3.3 above), MoRD provided access to the SharePoint folder where our experts started to analyse the set of 202 projects available for the three regions.

Description: The projects in the project database for financing with the use of the Just Transition Fund mechanism are grouped by three main criteria:

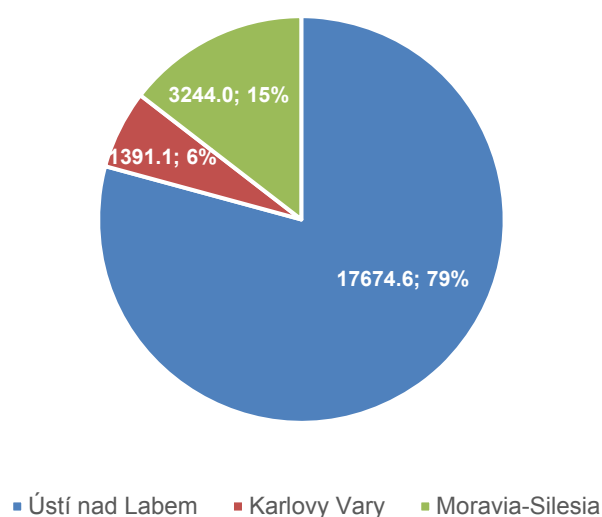
1. *Regions* (Ústí, Karlovy Vary, Moravia-Silesia)
2. *Readiness for implementation* (low, medium, high)
3. *Project area* (Pure mobility, Digitization, Energy efficiency, Investments in SME, Investments in R&D, Energy modernization, Circulating economy, Restoration of sites, Clean energy, Business support, Education support, Retraining, Unclassified projects)

Applications for projects are submitted according to a pre-developed template that is different for each region. Nevertheless, the basic structure is the same. The database is updated on a weekly basis.

Table 6: Number of projects and preliminary budget for projects with high and medium readiness (October 2020)

	Region	Number of projects	Total amount, mn CZK	Total amount, mn EUR
1.	Ústí	132	480,679.8	17,674.6
2.	Karlovy Vary ¹³	94	37,832.3	1,391.1
3.	Moravia-Silesia	45	88,225.3	3,244.0
TOTAL		271	606,737.4	22,309.7

Graph 9: Distribution of the budgets for the implementation of proposed projects, mn EUR and %



Note: Own calculation based on the preliminary data from MoRD (Oct 2020)

According to the latest figures provided by MoRD, the largest number of projects proposed for financing under the Just Transition Fund mechanism (both in terms of quantity and required budget) came from the Ústí region. A large amount of requested funds is a result of proposal of ambitious projects (Gigafactory, large PV parks, solar panel production plant etc.). On the other hand, the Moravia-Silesia region has a larger population, larger number of jobs in the coal industry and a higher share of unemployment. Therefore, we can expect higher level of impact from projects implementation in the Moravia-Silesia region both with respect of GHG emission reduction, as well as to decrease unemployment. It seems reasonable, to pay more attention to the distribution of the requested funds between the regions. Table 7 provides information about the structure of proposed projects.

¹³ Without distinction on readiness

Table 7: Preliminary budgets of proposed projects, breakdown by project area (October 2020), EUR million

	Ústí ml CZK	Moravia- Silesia ml CZK	Karlovy Vary ml CZK	Total amount ml CZK	Total amount mn EUR	Share of requested funds
Clean mobility	16 028.3	0.0	3 145.5	19 173.8	705.0	3.2%
Digitization	16 028.3	0.0	1 045.0	17 073.3	627.8	2.8%
Energy efficiency	139801.4	0.0	0.0	139 801.4	5 140.5	23.0%
Investments in SME	220.0	0.0	569.1	789.1	29.0	0.1%
Investments in R&D	7 288.6	12 752.0	4 948.0	24 988.6	918.8	4.1%
Energy modernization	139801.4	2 300.0	5 650.0	147 751.4	5 432.8	24.4%
Circulating economy	0.0	23 407.5	2 500.0	25 907.5	952.6	4.3%
Restoration of sites	0.0	23 407.5	6 844.7	30 252.2	1 112.4	5.0%
Clean energy	139801.4	14 693.0	6 760.0	161 254.4	5 929.3	26.6%
Business support	0.0	7 905.0	4 614.1	12 519.1	460.3	2.1%
Education support	0.0	1 880.00	1 755.8	3 635.8	133.7	0.6%
Retraining	0.0	1 880.00	0.0	1 880.0	69.1	0.3%
Unclassified	21 710.3	0.0	0.0	21 710.3	798.3	3.6%
Total	480 679.6	88 225.0	37 832.2	606 736.84	22 309.7	100.0%

The **breakdown by project area** in the previous analysis (18 September 2020) showed that approximately 50% of the requested funding relates to energy and energy efficiency projects, which directly affects the energy balance and CO₂ emission reduction of the regions without significant effect on the unemployment rate.¹⁴ It is also worth mentioning that the funding amounts requested are high (EUR 6.6 bn. vs. EUR 3.4 bn. of potential funding¹⁵) because in many cases the projects database includes a wider range of projects of which only some will be eligible for JTF. In this regard, it is necessary to screen the individual projects in the project database. The latest statistic (October 2020) illustrates another picture (Table 7) because a lot of ambitious projects in the sector of EE&RE were added from the Ústí region. In addition, the regions regrouped and merged project types in the database, which leads to fuzziness of the results. We propose to develop a unified database of projects with unified flexible system of reporting to prevent such problems.

Another important observation is that **the investments in SMEs** (0.1%) and **business support** (2.1%) is underrepresented. One reason could be the difficult accessibility for projects with no differentiation between large energy projects and SME projects that require smaller amounts of support. Within this context, the experience in the Upper Nitra region can serve as good practice, where through an open call with more simplified administrative procedures, SMEs could access funds in a less bureaucratic way to support business development and increase their competitiveness in the transformation of the coal region of Upper Nitra. The supporting projects aim at launching a new or innovative product of the applicant on the market or spur innovation in the production process.

Update on the development and assumptions of the modelling of the impacts

In order to assess the expected social, economic and environmental impact of the transition toward a climate-neutral economy, we will use the **E3ME model**, a computer-based application of the world's economic and energy systems and the environment. Its use requires the following:

- **Baseline:** The E3ME baseline is calibrated to IEA WEO 2019 and EU PRIMES energy forecasts. The baseline, as of now, does not include Covid-19, economic, labour or energy impacts. However, a baseline that includes estimated (OECD, IMF) impacts is being developed. It is important to note that these forecasts are still highly speculative as forecasters are unsure about multiple factors,

¹⁴ Energy efficiency measures indirectly reduce the energy production and consumption from fossil fuels, which leads to job losses. Usually, but not always, well-designed energy efficiency projects do not lead to job losses. For example: 1) Reconstruction of public lighting, insulation of buildings – no job losses, potentially new working places; 2) Fuel switching coal to gas - lead to job losses; 3) Renewable energy – potentially new workplaces and businesses

¹⁵ <https://www.euractiv.com/section/climate-environment/news/number-crunching-on-expanded-just-transition-fund-continues/>

such as the length of the pandemic or when a vaccine will be available. We suggest trying to incorporate estimated Covid-19 impacts in the modelling.

- **Disaggregation of E3ME results:** Translating the national E3ME results to the regional level (NUTS-3) and assessing what the transition means for the individual regions is a cornerstone of the assessment exercise. There are multiple methods for disaggregation and the appropriate method depends on data availability and other considerations (e.g. assumptions about impacts based on preceding tasks and consultations). Proportional disaggregation based on historical Eurostat NUTS-3 level data can be used as the simplest method in cases where available data is limited. In cases where more data is available at the regional level, a combination of shift-share method and ARIMAX modelling can be used to take both national, regional and industry level trends into account.
- Finally, for the most vulnerable industries (e.g. power sector, mining), the disaggregation of results could be made more robust with the usage of bottom-up modelling. The detailed disaggregation methodology outlined here has been developed by Cambridge Econometrics and it is being tested in another project.

AI/ML considerations

Related to the **potential of AI/ML**, for **D4** we will analyse the specific needs in the regions and design an AI use case landscape per region. To do so, we will:

- Make a maturity assessment of AI readiness in key areas for regional transition; and
- Review any strategical collateral (i.e. innovation, education, research, existing skills, etc.).

Planned activities: three regional focus groups and one-to-one interviews where necessary to develop a report on digital technologies and AI. These include a CMMI Maturity Assessment for the three regions and the envisioning of potential initiatives to facilitate the development of skills and foster specific job creation.

2.3.5 Task 5: Final report

Inception phase findings: none

The Final Report will include a brief summary of the activities undertaken during the project, including all meetings and consultation activities with stakeholders. The focus will be on recommendations for the transition process, including those for easy implementation ('quick wins'), analysis of the project monitoring indicators, priority investment needs and summary of lessons learned. These could also include recommendations referring on how to submit the TJTP application based on the restricted space for entering the content and general advice on the submission. The recommendations will be also made available in local language to facilitate the local authorities in its application. These also could include draft text proposals for the Czech Republic's application process to the JTF Fund in case feasible projects are already identified and ready for application. The final report will also include recommendations for the DG REFORM that could be used in similar projects in the future. These will focus on the lessons learnt from Project implementation and management or on topics like stakeholder engagement.

2.3.6 Others

Inception Report findings: As mentioned in the kick-off meeting, we would like to propose two 90-minute **online trainings** for local and regional stakeholders **on the development and delivery of successful projects** with the objectives

- to reach a common level of understanding of a framework for successful project development and delivery;
- to provide an overview of the key elements of successful project development and delivery; and
- to summarize different aspects of significance for successful project development and delivery.

We have been in contact with the respective trainers and will be presenting the proposal in one of the upcoming tri-partite meetings (Monthly Status Call or Steering Committee).

2.4 Recommendations for the implementation of the Project

Task 1: Inception Report

AI/ML considerations: During the kick-off meeting participants from different stakeholder groups raised interest to have a technical follow-up meeting for the topic of AI/ML. The meeting took place on the 26th of November 2020, where the experts together with participants from the Czech Government (MoRD, MoE, MIT) and the Commission (DG REFORM and DG REGIO) discussed different topics concerning the inclusion of AI and ML in the transition process: examples of environmental AI applications, the reasons why AI could play a role for TJTP, the current situation in the country and the innovation strategies in the three regions. Next steps would include to map out the data quality and data stock for decision-making (related to the monitoring of the action plan etc.), review existing tools used by the government, present best-practices for smart dashboards, the review of use cases for technology and data-driven approaches for smart transition in selected sectors and identify options for smart dashboards. Refer to Annex 4 for the meeting presentation.

We received on the 01.12.2020 a follow-up request from MoRD to consider the analysis of the use of AI/ML for the screening the projects eligible for the JTF, to identify in the presented projects potential for AI/ML solutions and to include use cases of AI/ML in the areas of education and inclusion of lower educated workers and their reskilling. This request will be analysed in the course of the next weeks and we will revert with some proposals.

Task 2A: Governance Mechanism

We have developed a stock-taking and preliminary analysis of existing **governance structures**, and mechanisms that might be relevant for the design and implementation of the Territorial Just Transition Plan of the Czech Republic. It will be important to receive as soon as possible feed-back on our ideas in order to feed into the D2 (Report on Governance Mechanism and Stakeholder Engagement) where we will apply for further analysis and proposal our methodology presented in the technical proposal. However, after our analysis and given the existing partnership mechanism of the Czech government for the preparation of the TJTP we would prefer to develop one single option that already takes into account the governance of the preparation (already implemented by the MoRD) and which is followed by a more sophisticated structure when it comes to the implementation of the TJTP (including a broader basis). Alignment with other ministries is important.

Reporting and smart dashboards: Based on the discussion in the November workshop (refer above), we will process to the advice on how **to design smart dashboards for monitoring and evaluation** of the planned measures with the presentation of some representative use cases/best practices and in case a need appears advise on its design. Thus, we will include the related activities in our work plan.

Task 2b: Preliminary Stakeholder Mapping / Engagement Strategy

Here the stakeholder engagement strategy needs to include the overlaps and synergies of existing stakeholder coordination. It should be linked to different governance structures existing. However, an important point is to include and develop our proposals about the different communication channels (instruments) on how to engage with the different stakeholders. There are also a number of stakeholders at the regional and local level that need to be advised to be taken into account to provide an adequate stakeholder mobilisation and inclusive stakeholder strategy. In the stakeholder strategy, we will also formulate clear recommendations to the Czech government which other stakeholder groups to include and the importance of those. There is a unified stakeholder list (including the stakeholders identified by the Czech government and those additionally identified by the expert team.

Task 3: Assessing the transition towards climate neutrality

Here it is important to keep a communication about the updates of the changes/decisions of the EU and country policy frameworks related to the Task, e.g. date for coal phase out, final versions of the RRP, MF, some detailed data for developing the **national and regional impact analysis, relevant impact assessments** that may have been carried out either under Coal Commission or within the works of the MoRD (as referred to e.g., in the Stakeholder workshop in Moravia-Silesian Region on the 6 March 2020). The territorial eligibility may be assessed at a later stage based on the results of impact analysis and absorption capacity and eligibility of projects in the 3 existing, priority regions.

AI/ML considerations: Based on the preliminary analysis and the workshop (held on November 26th, 2020), our AI/ML experts reviewed the potential of AI/ML for supporting the transition to carbon-neutrality. In order to do this, we will prepare a use cases landscape and smart transitional roadmaps

and in particular with the planned activities: one focus group and one to one interviews whereas necessary in order to develop a report on use case landscape per sector.

There might be delays as regards to the availability of the stakeholders for the interviews and for the regional workshops due to the epidemic situation and related impacts (see also section 2.4). Most of the interviews and the roundtables are highly likely to be carried out online. However, delays will have to be foreseen in arranging the interviews due to the stakeholders' potential unavailability (health, family conditions, reduced office hours, etc.). This will be included in the progress reporting.

Task 4: Action Plans for the territorial transition

As per the status quo analysis, there is a strong need to articulate the transition and offer a layout and action plan with a road-map and specific measures to de-carbonize but also make sure the workers are re-skilled and the economies in the regions are rejuvenated.

We suggest to **include in the work plan the support to MoRD in screening of projects** from database. Before starting with the support, we would like to propose early 2021 to organise a workshop with the Commission and the Czech Government where the final criteria for project screening (further developed as below) to be discussed.

Develop significance criteria for project screening, which will allow ranking the projects for funding both from the Just Transition Fund and from other sources of funding. A preliminary list of criteria for evaluating projects is presented below:

- Additionality (Project would not happen without JTF funding);
- Effectiveness (Project have a significant impact on transition challenges);
- Environmental Integrity (Project is in line with the 2030¹⁶ and 2050 climate and energy targets);
- Timeliness (Can be implemented in the relevant timeframe);
- Efficiency (Good use of public funds, for example by leveraging significant levels of private investment).
- Maturity of the project (Status of project concept, feasibility study, architectural study, etc.);
- Value added (Project would/would not increase value added in a region);
- Job creation (Project would/wouldn't lead to jobs creation).

To determine the weight of each criterion, it is proposed to use an expert evaluation method followed with approval of the results by representatives of the government of the Czech Republic.

For development of an efficient and useful projects database, the following steps should be advisable:

- Preparation of the final list of evaluation criteria;
- Determination of the weight of each criterion;
- Collecting of projects from other project databases related to the purposes of Just Transition;
- Screening and ranking of proposed projects in line with the evaluation criteria;
- Selective verification of project applications for the correctness of the data provided;
- Finalization of the project database.

Here, it would also be important to consider some differentiated treatment for project proposals for example between SMEs (less requirements) and for larger projects as referred to in Section 2.3.4 above. The same could apply to integrate in the project proposal templates already information where proponents can include whether a project could be seen under the just transition.

We will include a coordination related to the criteria applied by the **E3ME model**, related to:

- Incorporating the estimated Covid-19 impacts in the modelling;
- Disaggregation of E3ME results: Usage of shift-share and/or ARIMAX; and
- Finally, for the most vulnerable industries (e.g. power sector, mining) disaggregation results could be made more robust with the usage of bottom-up modelling. The detailed disaggregation methodology outlined here has been developed by Cambridge Econometrics and it is being tested in another project.

Potential of AI/ML, for D4: we will analyse specific needs in the regions and design an AI use cases landscape per region. In order to do so we will integrate our activities in the work plan as follows: make a maturity assessment of AI readiness in key areas for regional transition, review any strategical collateral (I.e.: Innovation, education, research, existing skills). **Planned activities:** three regional

¹⁶ Reduce greenhouse gas emissions by 40% compared to 1990; Achieve a 32% share of energy produced from renewable sources; Improve energy efficiency by 32.5%.

focus group and one to one interviews whereas necessary for developing a report on digital technologies and AI including CMMI Maturity Assessment for the three regions and the envisioning of potential initiatives to facilitate the development of skills and foster specific job creation.

3. DATA COLLECTION/INPUTS; NEED FOR SUPPORT FROM THE COMMISSION AND/OR FROM THE CZECH GOVERNMENT

We have established coordination with MoRD and the concerned DGs and will be directly collecting data/feedback throughout the project. Within the stocktaking exercise, we have collected the following documentation and need to corroborate it with the Czech authorities.

Governmental strategic documents

- Economic Strategy of the Czech Republic 2020–2030
- Innovation Strategy Czech Republic 2019-2030 – The Country for The Future
- National Investment Plan Czech Republic until 2050
- Czech Republic 2030: Digital Czechia
- Development of the Transport Infrastructure until 2050
- National Action Plan Clean Mobility, Transport Infrastructure Plan until 2050
- National Energy and Climate Plan of the Czech Republic (NECP)
- National Policy for Research, Development and Innovations of the Czech Republic 2021+
- Main directions of the Education Policy Czech Republic 2030+, Health 2030, and other documents.

Programmes – EU structural funds programming

- Template containing the draft Partnership Agreement for the programming period 2021-2027
- Draft operational programmes for the programming period 2021-2027
 - Technology and Applications for Competitiveness Operational Programme managed by the Ministry of Industry and Trade
 - Transport Operational Programme managed by the Ministry of Transport
 - Operational Programme Environment managed by the Ministry of the Environment
 - Operational programme Jan Amos Comenius managed by the Ministry of Education, Youth and Sports
 - Operational Programme Employment Plus managed by the Ministry of Labour and Social Affairs
 - Integrated regional operational programme managed by the Ministry of Regional Development
 - Proposal for the use of funds from the Fund for Just Transition
 - Operational Programme Technical Assistance managed by the Ministry of Regional Development
 - Information on the state of preparation of European Territorial Cooperation programmes
- Rules for the management and coordination of the Partnership Agreement in the programming period 2021-2027
- Information on the possibilities of implementing the second and third pillars of the Mechanism for Just Transition in the Czech Republic in the programming period 2021–2027
- Information on the possibilities of using the InvestEU programme in the Czech Republic in the programming period 2021–2027
- The draft Fisheries Operational Programme will be submitted by the Ministry of Agriculture in a separate document.
- The Territorial Dimension document in the 2021+ operational programmes has not yet been submitted with regard to the need for further discussion on the application of the territorial dimension, both with the managing authorities of the operational programmes and with the regional partners.

The elaboration of the above documents follows from Government Resolution No. 815 of 27 July 2020, Government Resolution No. 94 of 4 February 2019 and Government Resolution No. 562 of 30 July 2019.

4. ANNEXES

Index

Annex 1: Kick-off meeting presentation (19.10.2020)

Annex 2: Funding programmes in the Czech Republic – time axis

Annex 3: Background information about RE:START strategy

Annex 4: Presentation of the AI/ML follow-up meeting (26.11.2020)

Annex 5: Data requirement for E3ME Model

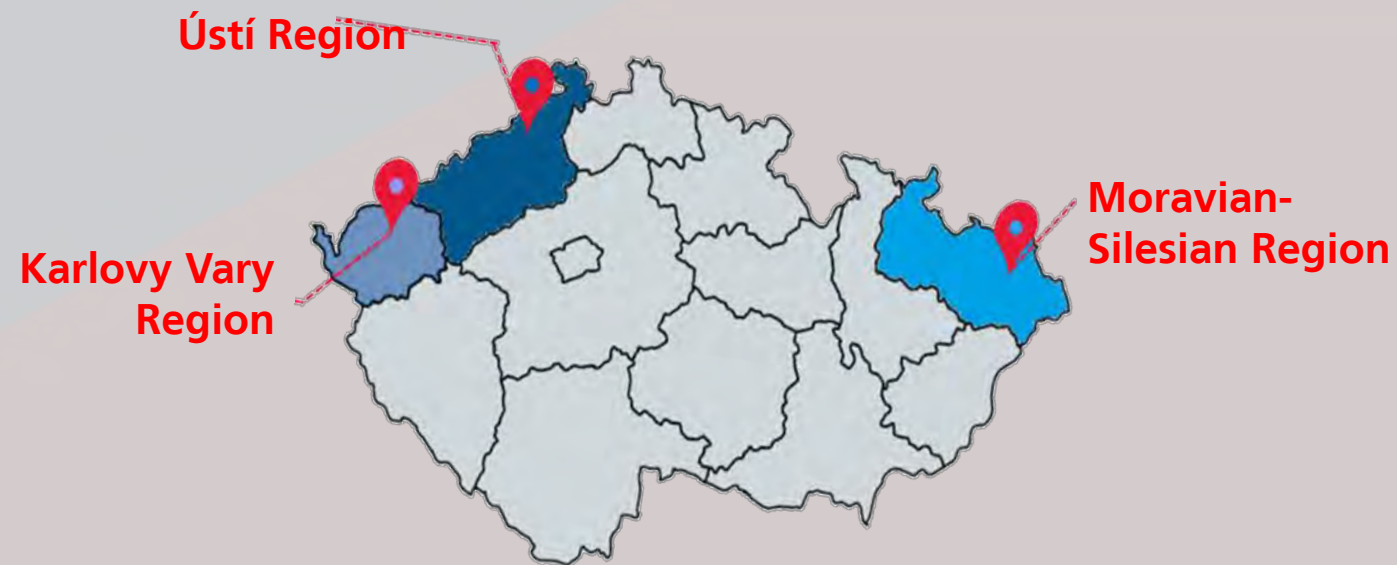
Annex 6: Draft outline for D2, updated outline of D3 and outline of D4

Annex 7: Proposal for impact monitoring indicators after the conclusion of the Project

ANNEX 1: KICK-OFF MEETING PRESENTATION

Kick-off meeting for REFORM/SC2020/111 - JTPs Czech Republic
19th of October 2020, 15:00 – 17:30 CET, online

Support to the preparation of Territorial Just Transition Plans in Czech Republic





AGENDA

Time	Topic
15:00 – 15:15	Tour de table / Introductions
15:15 – 15:30	Introduction by the Ministry of Regional Development of the Czech Republic and updates on relevant processes (JTF and JTP, other programmes etc.)
15:30 – 15:45	Word of welcome by Mr. Kaspar Richter, Head of Unit for Growth and Business Environment at DG REFORM Wider Context of the Just Transition Mechanism by DG REGIO
15:45 – 17:00	Presentation by the Frankfurt School Project Team followed by Q&A
17:00 – 17:15	Discussion on fields of support from the Commission and the Beneficiary
17:15 – 17:30	Next steps & Other business



PROJECT SYNOPSIS

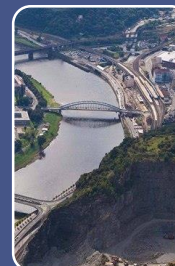
Specific Contract	REFORM/SC2020/111 Support to the preparation of Territorial Just Transition Plans in Czech Republic
Contracting Authority	European Commission (DG REFORM)
Beneficiary	Ministry of Regional Development of the Czech Republic (MoRD)
Implemented by	Frankfurt School of Finance & Management (as part of the AARC Consortium) in cooperation with Trinomics, Czech Technical University and Cambridge Econometrics
Begin of services	5 October 2020
Duration	9 months

PROJECT CONTEXT

CZECH REPUBLIC

- JTF allocation for CZ: EUR 0.581 bn w/ total of EUR 2.1 bn under Pillar I*
- Coal and lignite 49% of CZ energy mix (2019); CZ 3rd largest coal producer in the EU
- NECP: 11%-21% (coal and lignite); RE increase to 18%-25% by 2040
- GHG emission reduction of 30% in 2030 < EU target of 32%
- GDP per capita: EUR 33,389
- Unemployment: 3.7%
- 1.1 million SMEs (58% of employment / 40% of GDP)
- 19,000 indirect jobs are linked to coal phase-out
- Investment barriers: weak transport and skills mismatches, labour shortages
- COVID-19 GDP: - 8% in 2020; 2021 likely to recover...

Notes: *Under revision; technical proposal includes all bibliographical references from years 2018-2020



Ústi

- Population: 819,713
- No of coal mines: 4 active
- Jobs in coal sector: 5,000
- Total jobs: 385,000
- Unemployment: 5.41%
- GDP per capita: EUR 13,744



Karlovy Vary

- Population: 294,331
- No of coal mines: 1 active
- Jobs in coal sector: 4,000
- Total jobs: 149,600
- Unemployment: 5.27%
- GDP per capita: EUR 12,396

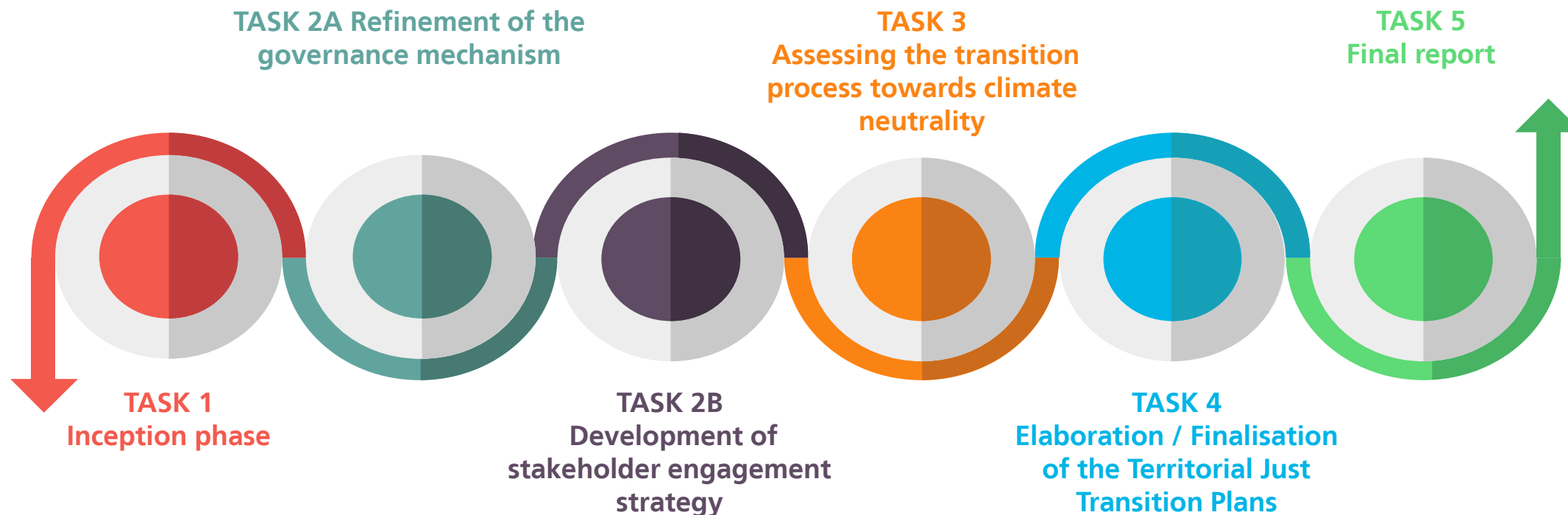


Moravian-Silesian

- Population: 1,198,534
- No of coal mines: 4 active / 8 in total
- Jobs in coal sector: 10,000
- Total jobs: 579,800
- Unemployment: 5.56%
- GDP per capita: EUR 16,016



PROJECT ROADMAP



PROJECT OUTCOME: Finalisation of the territorial Just Transition Plan(s) for the Czech Republic



TASK 1 - INCEPTION PHASE

Duration: 5 October – 4 November 2020

KEY ACTIVITIES

- Organise the kick-off meeting
- Develop preliminary stakeholder mapping, ongoing support programmes
- Provide status updates on the context, approach and methodology, work plan

DELIVERABLES

- Inception Report (D1)

CHALLENGES

- Just Transition Fund legislation for the EU still in draft version
- Impact of COVID-19 on the project implementation
- Limited local and regional absorption capacity
- Elections in early October

OPPORTUNITY

- Progress in developing the Just Transition Plans by the Czech Government

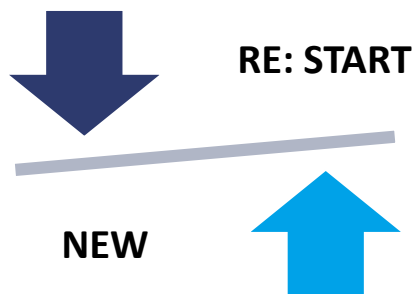


TASK 2A - REFINEMENT OF THE GOVERNANCE MECHANISM

Duration: November – December 2020

KEY ACTIVITIES

- Propose a governance mechanism for the just transition agenda:



OPTION 1: Refinement of the existing governance mechanism for RE:START

OPTION 2: Set-up of a separate governance structure:

- inclusion of regional and local layers
- requirement of political validation, long-term political support
- ensuring policy coherence / interaction with the Commission
- benchmarking with good practices from Germany and Slovakia

DELIVERABLES

- Report on Stakeholder Engagement and Governance Mechanism (D2)

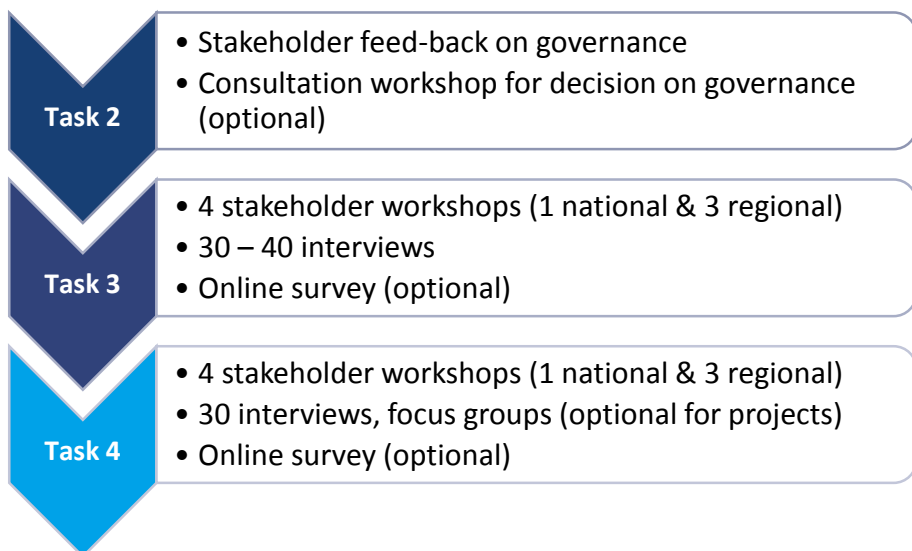


TASK 2B - DEVELOPMENT OF A STAKEHOLDER ENGAGEMENT STRATEGY

Duration: November – December 2020

KEY ACTIVITIES

- Develop and implement a stakeholder engagement strategy:



Progress

- Preliminary stakeholder mapping with over 50 stakeholders, taking into account the recent elections
- Stakeholder matrix identifying the parties for collaboration, involvement, information and consultation
- Czech team members' liaison with many different stakeholder groups
- Czech Just Transition Platform set-up recently

DELIVERABLES

- Report on Stakeholder Engagement and Governance Mechanism (D2)



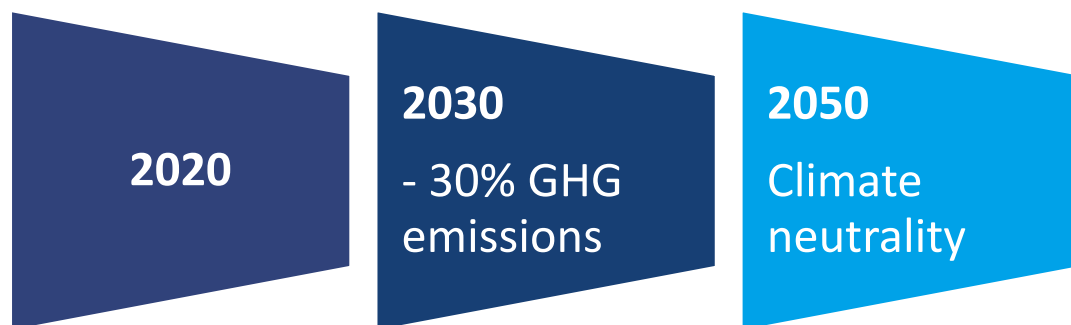
TASK 3 – ASSESSING THE TRANSITION PROCESS TOWARDS CLIMATE NEUTRALITY

Duration: November 2020 to January 2021

KEY ACTIVITIES

- Describe the national transition to climate neutrality with key transition steps
- Assess the impact of the national climate transition overall and for the three regions and other affected territories

National Climate Transition of Czech Republic



- Investment needs for reaching climate neutrality
- **Priority investment needs** for Regions in Transition to cushion the impact

DELIVERABLES

- Report on the transition process towards climate neutrality for Czech Republic (D3)



TASK 3 – SITUATIONAL SNAPSHOT OF THE REGIONS

CRITERIA

Economy, entrepreneurship and innovation

Aging population
Lack of diversification
Innovation

Employment

Increase of unemployment
Unskilled workers

Sustainable environment

Air pollution
Contaminated production sites
Negative impact on health
Lack of GHG free energy

Mobility and interconnection

Lack of Infrastructure and accessibility

	ÚSTÍ	KARLOVY VARY	MORAVIAN-SILESIA
Economy, entrepreneurship and innovation			
Aging population	Yes	Yes	Yes
Lack of diversification	Yes	Yes	Partially
Innovation	Partially	Partially	Yes
Employment			
Increase of unemployment	No	No	No
Unskilled workers	Yes	Yes	Partially
Sustainable environment			
Air pollution	Partially	Partially	Yes
Contaminated production sites	Partially	Partially	Yes
Negative impact on health	Partially	Partially	Yes
Lack of GHG free energy	Yes	Yes	Yes
Mobility and interconnection			
Lack of Infrastructure and accessibility	Partially	Partially	Partially

➔ **Transition Challenges need to be tackled, but also depend on the absorption capacity of the regions**

Note: without impact of COVID-19



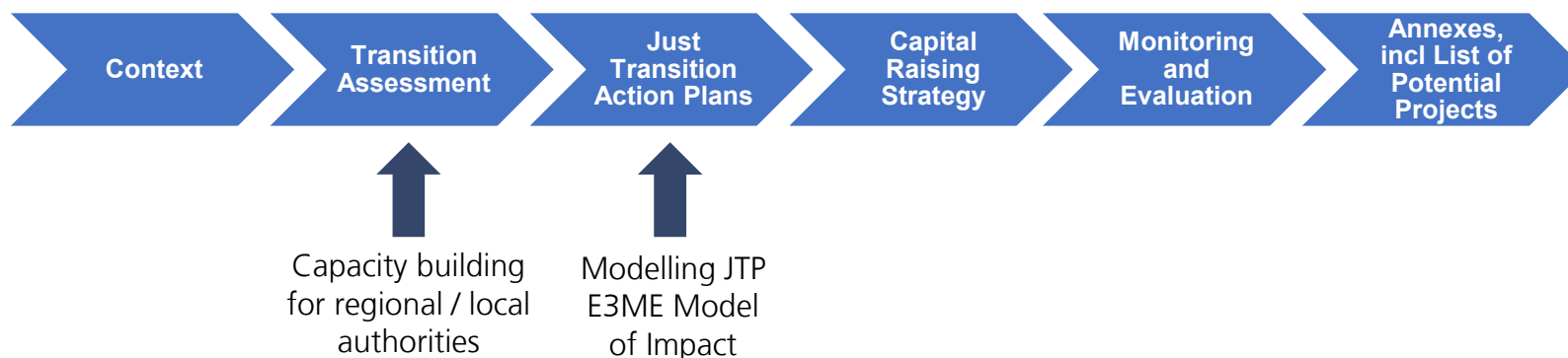
TASK 4 – ELABORATION / FINALISATION OF THE TERRITORIAL JUST TRANSITION PLANS

Duration: December 2020 to March 2021

KEY ACTIVITIES

- Assess the transition challenges and needs (political-administrative, economy & employment, environmental, socio-cultural, digital/technological) and build action plans for a roadmap of specific measures
- Evaluate the impact of the national climate transition overall and for the three regions and other affected territories

Key Elements of the Report:



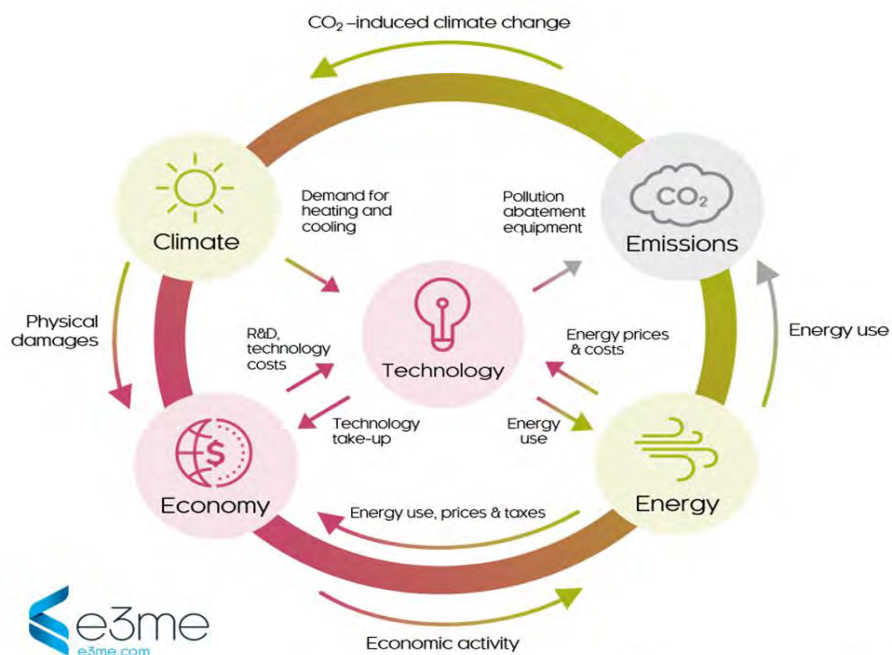
DELIVERABLES

- Report on the challenges, needs & (smart) action plans for the most affected territories of the Czech Republic (D4) – for each region separately



TASK 4 – JTP / TRANSITION IMPACT - E3ME MODEL

Assessment of the expected social, economic and environmental impact of the transition to a climate-neutral economy



Baseline (“business-as-usual” case)

The baseline for the analysis will be calibrated to public EC energy & emission reference case, while labour market projections will be based on Cedefop Skills forecast 2020. **Inclusion of the impact of Covid19 needs to be discussed and agreed upon with DG Reform and partners.**

Impact scenario to be modelled

The modelled scenario will be designed to illustrate the Czech Republic’s path by 2030 to reach the EU objectives of climate-neutrality by 2050.
Sources: NECP, European sources, results of preceding tasks.

Impacts presented

- Percentage differences from the CZ baseline
 - National level: GDP, output & employment at 41 sector detail, CO₂ emissions aggregated to 23 fuel users
 - NUTS 3 level disaggregation based on JRC & Eurostat
 - NUTS 3 level: output, employment and CO₂ emissions
- NUTS 3 level results, for the Transition Regions, give an opportunity to assess employment impacts and future jobs prospects for employees of both declining and transforming sectors identified. E.g. coal mining, power plants, significant emitters of GHG etc.

CE application in Czech Republic

RegSim’ project funded by the Technology Agency of the Czech Republic; main stakeholders are Czech Ministry of the Environment and the Ministry of Trade.



TASK 4 – JTP / CAPITAL RAISING STRATEGY (FOR EE & RES)

KEY ACTIVITIES

- Identifying the key barriers to raising capital in the respective areas through stakeholder involvement
- Development of a set of specific recommendations for addressing the barriers

EXAMPLE FOR CAPITAL RAISING STRATEGY FOR ENERGY EFFICIENCY AND RES SECTORS

- Capital not perceived as a limiting factor, however, there is a persisting significant investment gap
- Institutional and policy barriers prevent project development such as:
 - Lack of technical assistance
 - Low priority and strategic leadership
 - Administrative burden
 - Low diversity of financing mechanisms

Source: Valentová, M., Dunovski, D., Knápek, J., 2020. Prototype Capital Raising Strategy for Czechia: buildings and renewable energy supply. Prague: Czech Technical University in Prague.



TASK 5 - FINAL REPORT

Duration: April 2021

KEY ACTIVITIES

- Write a final report, including annexes of all documentation produced for D1 – D4; project closure presentation:
 - The work on the final report can start once the Tasks 1 to 4 are finished.
 - Brief summary of the activities undertaken during the project, including all meetings and consultation activities with stakeholders
 - Main focus of the final report: recommendations for the transition process, including those for easy implementation ('quick wins), analysis of the project monitoring indicators, priority investment needs and summary of lessons learned.
 - Could include draft text proposals for the Czech Republic's application process to the JTF in case feasible projects are already identified and ready for application.
 - Recommendations for the DG REFORM that could be used in similar projects in the future.

DELIVERABLES

- Final Report (D5)



POTENTIAL OF AI/ML AND DIGITALISATION (1/2)

CONTEXT

- Digitalisation of the economy is one of the **priorities** set by the EU.
- The application of artificial intelligence (AI) and machine learning (ML) could support in defining **dynamic modelling** of policies impact, as well as to measure, facilitate and enable more sustainable electricity systems, and optimize and improve transportation, while facilitating the shift towards smart buildings and smart cities.
- The development of automation and **AI is advancing quickly in Czech Republic** (Czech Republic ranks 31st among 194 countries and 3rd among newer EU Member States)
- The long-term nature of the JTPs requires considering the application of digitalisation and the potential of AI/ML for developing **smart transition strategies**

SMART transition strategies

- Analysing **use cases** for technology and data driven approaches in transition in selected sectors
- Analysis of data stock and data quality for SMART Transition
- Smart dashboard for monitoring transition
- Data-Driven adaptive plan



POTENTIAL OF AI/ML AND DIGITALISATION (2/2)

USE CASES IN PRIORITY AREAS FOR CZECH REPUBLIC

- Sustainable electricity systems
- Optimisation and improvement of transportation
- Facilitating the shift towards smart buildings and smart cities
- Improving industries in several ways (optimisation and prescriptive features), from reducing overproduction to predictive maintenance to the use of cleaner electricity
- Precision farming
- Forests monitoring

Step 1

- D1-Envisioning digitalization opportunities for smart transition
- D2- Presentation of best practices for smart dashboards
- D3|D4- Use case landscape per sector and per region

Step 2

- Data quality and data stock assessment
- Design of smart dashboard
- Smart plan including AI maturity assessment report

Step 3

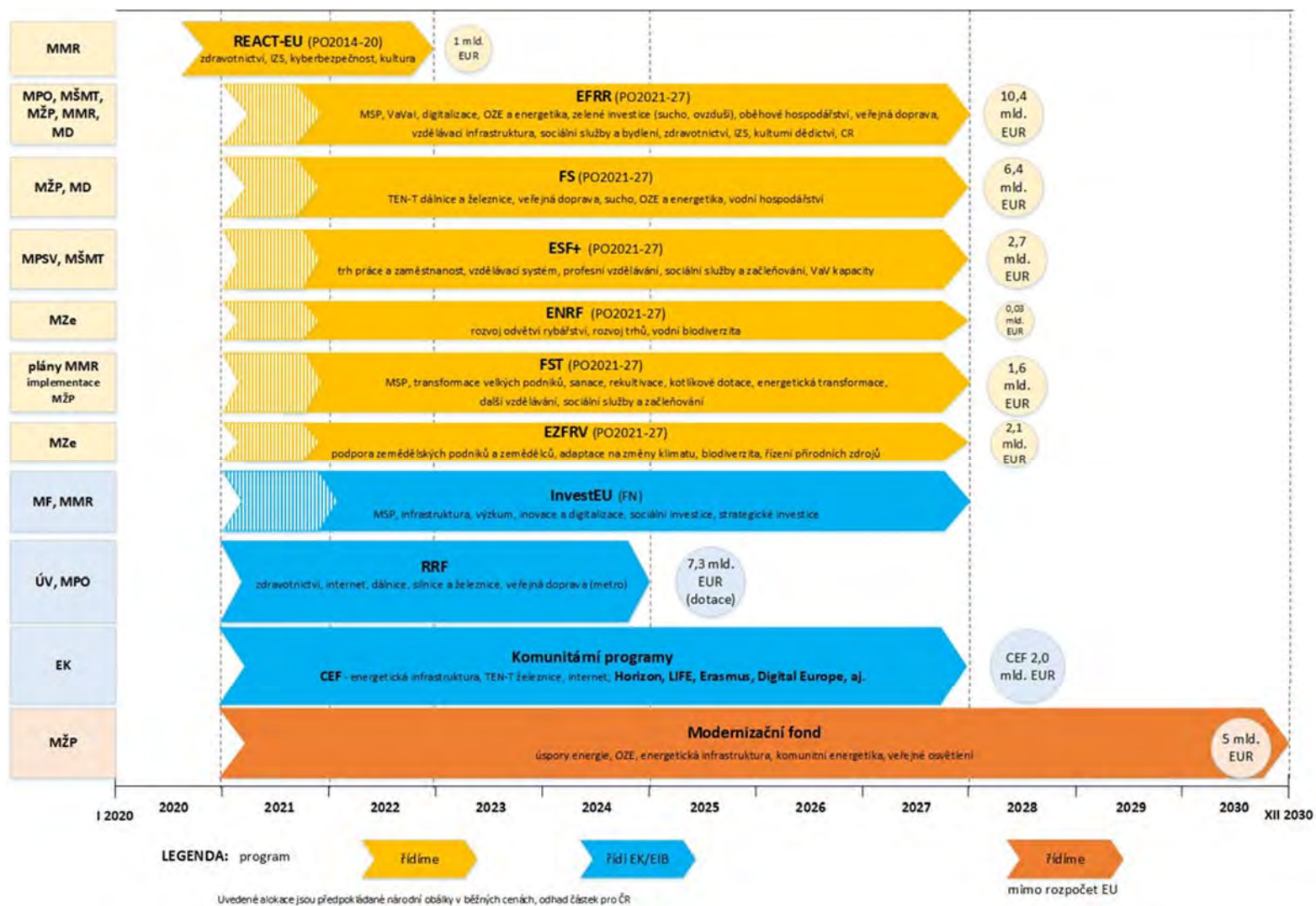
- Data driven adaptive plan

This presentation was produced with the financial assistance of the European Union. The views expressed herein can in no way be taken to reflect the official opinion of the European Union.

**THANK YOU FOR
YOUR ATTENTION**

ANNEX 2: FUNDING PROGRAMMES IN THE CZECH REPUBLIC – TIME AXIS

Figure: Funding programmes in the Czech Republic – time axis



Notes: yellow: managed by Czech Rep., blue: European Commission/EIB, red: managed by MoE

Source: Daniela Grabmüllerová, Setkání územních partnerů [Meeting of regional partners], Žďár nad Sázavou, September 21, 2020 (presentation)

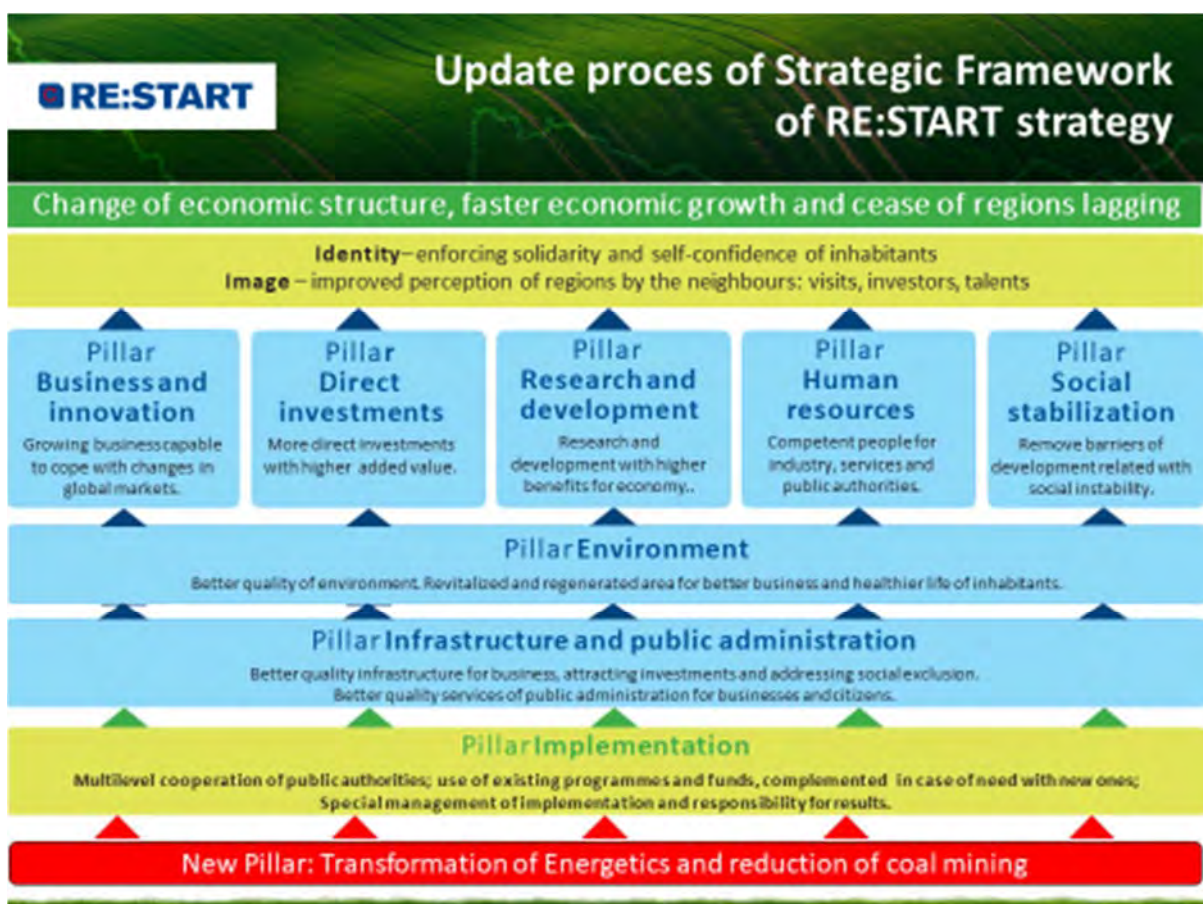
ANNEX 3: BACKGROUND INFORMATION ABOUT RE:START STRATEGY

BACKGROUND INFORMATION ABOUT RE:START STRATEGY

RE:START was initiated in 2014 – the Government assigned the MoRD to elaborate the restructuring strategy of three so-called structurally weak regions or structurally affected regions (Ústí region (UTK), Karlovy Vary (KVR) and Moravian-Silesian (MSR)). In the same year, the Czech Government reactivated the position of the Government Commissioner for those regions. After that, the Economic Strategy (Strategic Framework) and Action Plan were elaborated (approved in 2017 by the Government). The Action plan is updated annually. To date, three Action Plans are being implemented.

The goal of the strategy is to change the economic structure, encourage faster economic growth and improve the status of lagging regions (<https://www.restartregionu.cz/in-english/>). RE:START has eight pillars (Figure A.3.1) that cover more than 95 measures. There is no strong profiling of the measures according to partial goals, the updating of measures follows the ideas and proposals coming from the regions. The funding stream of the RE:START strategy is coordinated by managing authorities of operational programmes (Ministry of Education assigned some specific calls of expression of interest for projects in the three regions), with the Technology Agency of the Czech Republic (TAČR) (who introduced additional points for those projects submitted by institutions from three regions) and with ministries (MIT introduced a special programme for land rehabilitation in three regions funded from Czech sources). The RE:START strategy includes the obligation to evaluate the impacts regularly. This is realised as part of update of the background analysis (submitted to the Government for approval in 2020).

Figure A.3.1: Pillars of the RE:START strategy



Source: MoRD - Strategy of Economic Restructuring of Usti, Moravian-Silesian and Karlovy Vary Regions, Brussels 2020

The share of incremental national sources on the overall funding stream is rather small, a few hundred million CZK. Detailed data are included in the report “Aktualizace vstupní analýzy Strategie hospodářské restrukturalizace Ústeckého, Moravskoslezského a Karlovarského kraje” [Update of Introductory Analysis for the Strategy of Economic Restructuring of UK, MSR, KVR], 2020.

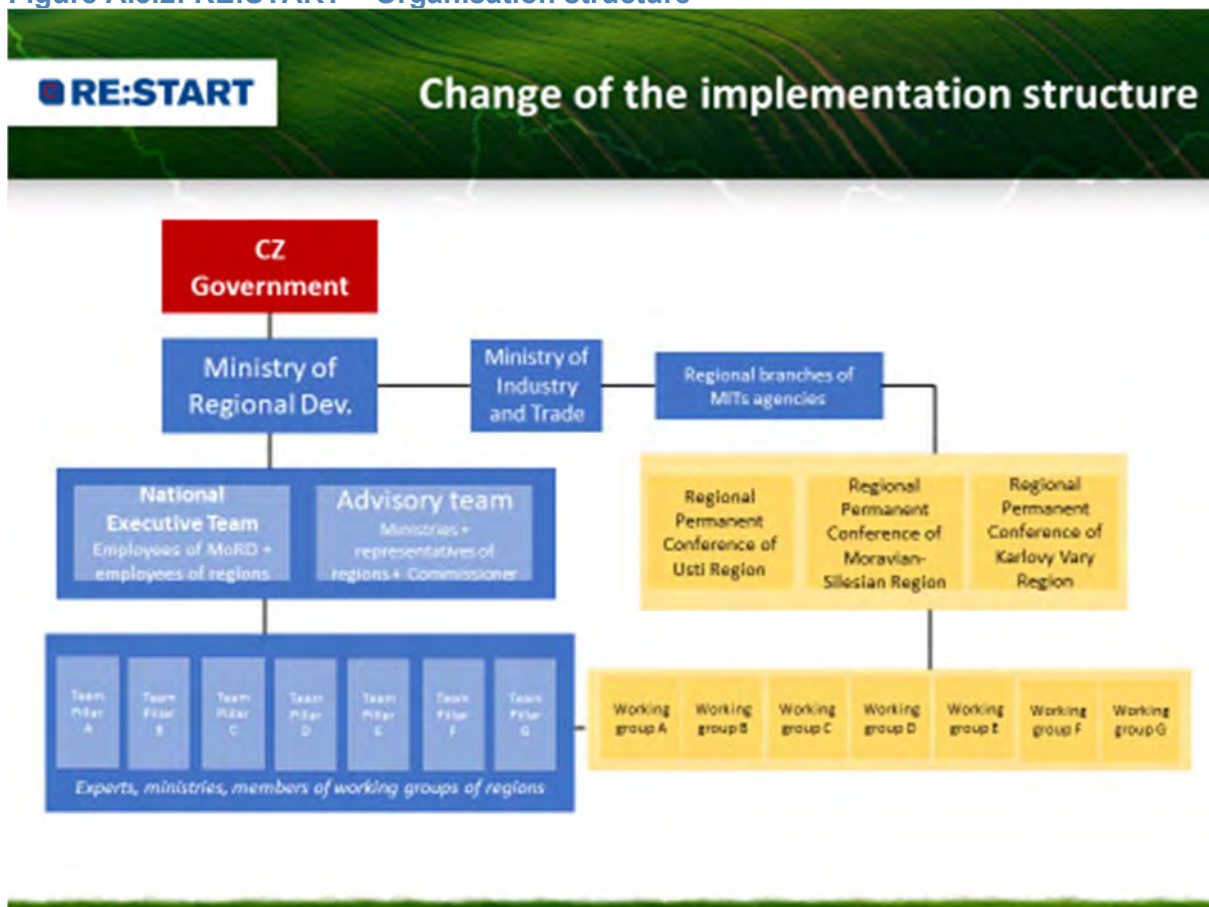
Table A.3.1: National financial resources assigned to the RE:START (as to Sept 30, 2019)

Ustí Region	1,888 bn CZK
Karlovy Vary region	0,283 bn CZ
Moravia-Silesia region	2,687 bn CZK
Total	4,858 bn CZ

Note: 1 EUR equivalent of 26.2 CZK (September 2020)¹⁶

There is no systematic coordination of measures within the RE:START strategy on energy and climate transition to date. However, the coordinating agency (MoRD) is discussing the overlap and need to coordinate in the context of JTP preparation. Nevertheless, the new pillar “Transformation of Energetics and Reduction of Coal Mining” was recently added (Figure A.3.2) to the latest Action Plan.

Figure A.3.2: RE:START – Organisation structure

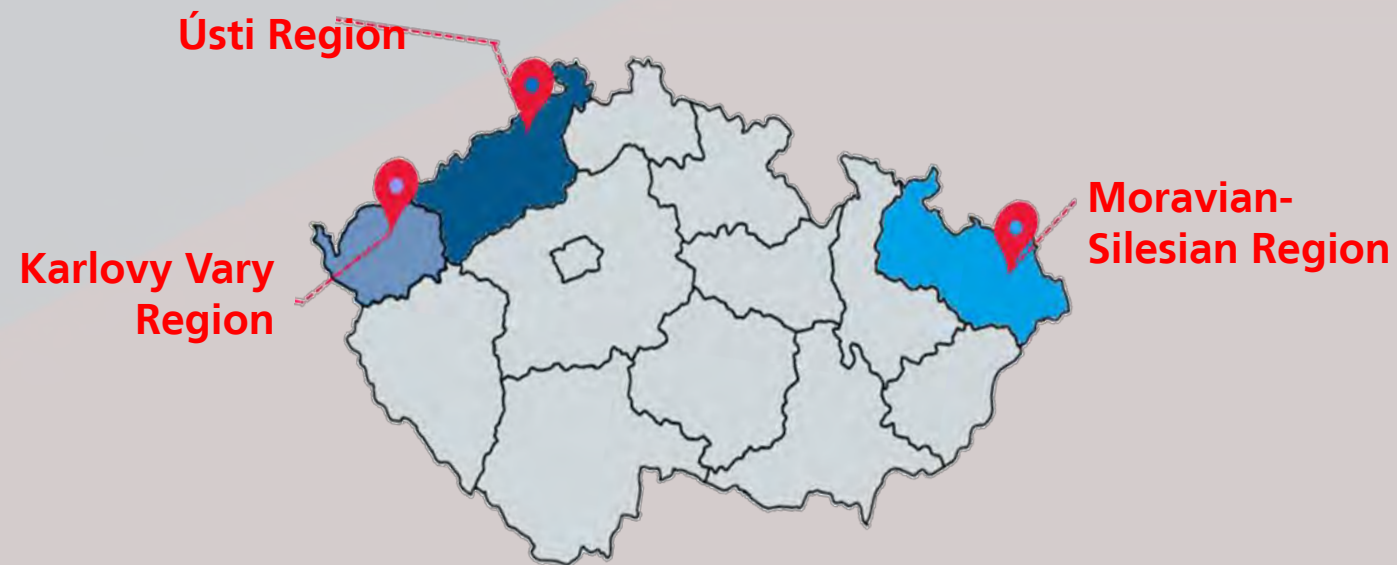


Source: MoRD - Strategy of Economic Restructuring of Usti, Moravian-Silesian and Karlovy Vary Regions, Brussels 2020

¹⁶ https://ec.europa.eu/info/funding-tenders/how-eu-funding-works/information-contractors-and-beneficiaries/exchange-rate-infoeuro_en

ANNEX 4: Presentation OF THE AI/ML FOLLOW-UP MEETING (26.11.2020)

Support to the preparation of Territorial Just Transition Plans in Czech Republic





AGENDA

- Introduction and Project Overview
- Review of the current vision for AI in the Czech Republic
- Review of priorities for AI and ML for the Just Transition Plans
- Discussion on the current AI initiatives and data stock in the Czech Republic

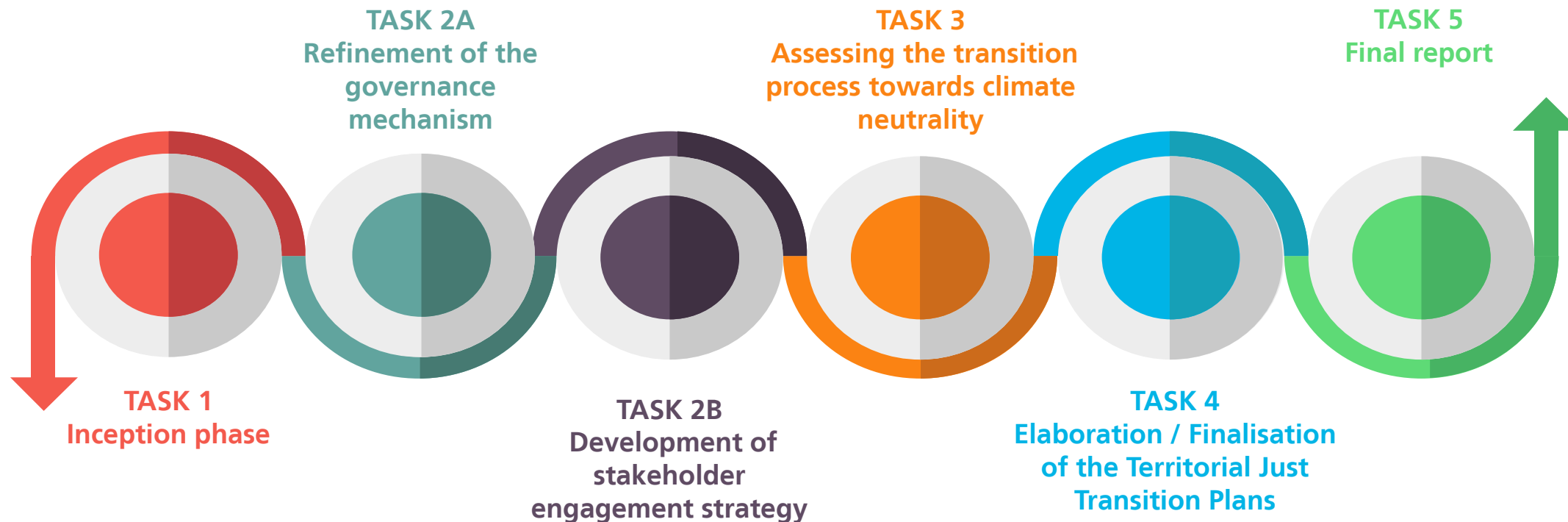


PROJECT SYNOPSIS

Specific Contract	REFORM/SC2020/111 Support to the preparation of Territorial Just Transition Plans in Czech Republic
Contracting Authority	European Commission (DG REFORM)
Beneficiary	Ministry of Regional Development of the Czech Republic (MoRD)
Implemented by	Frankfurt School of Finance & Management (as part of the AARC Consortium) in cooperation with Trinomics, Czech Technical University and Cambridge Econometrics
Begin of services	5 October 2020
Duration	9 months



PROJECT ROADMAP



PROJECT OUTCOME: Finalisation of the territorial Just Transition Plan(s) for the Czech Republic



WHY AI?

- Huge amount of **available data**, unlimited amount of cheap **computing power** is pushing a new AI through Machine Learning
- Potential to economic **impact in nearly all sectors**
- **Environmental impact** – AI levers: 4% decrease in GHG emissions*

AI levers could reduce worldwide greenhouse gas (GHG) emissions by 4% in 2030, an amount equivalent to 2.4 Gt CO₂e – equivalent to the 2030 annual emissions of Australia, Canada and Japan combined

Source: PWC 2020, How AI can enable a sustainable future



ENVIRONMENTAL AI APPLICATIONS

ACCELERATING LOW CARBON TRANSITION

The environmental applications of AI can reduce GHG emissions via the following channels:

- **Reduction of GHG intensity** of the use of specific fossil fuels and/or in the overall production process. For example, the GHG intensity of cars could be reduced with cleaner engines that emit less non-carbon GHGs.
- **Higher efficiency of energy use** by households and given industry sectors. For example, more fossil fuel efficient power plants produce the same amount of electricity with less fossil fuel, lowering the overall demand for fossil fuels.
- **Change in energy mix in given sectors**, especially in the currently fossil fuel intensive sectors of transport and energy. AI tools enable renewables to become more cost-effective and motivate the shift away from fossil fuels to cleaner energy sources to produce a given level of output.



WHY AI FOR TJTP?

Smart Transition and AI use cases

- Improve existing industries to lower carbon footprint and optimize - i.e. Mining, energy production
- Monitor impact of CO2 - Cities / Regions (Satellite / Others)
- Improve and optimize energy systems - Monitoring / Forecasting / clean energy enablement
- Monitor and optimize carbon sequestration (Forest Monitoring)
- Support and enable re-skilling and labour shift (AI4ED, Smart Assistant)
- Facilitate a transition vs. AI / Digital Economy

Monitoring and governance

- Prediction/ Prescriptive models
- Dashboards and data



AI VISION IN CZECH REPUBLIC

RELEVANCE OF AI STRATEGY

The **National AI Strategy** (NAIS) is part of the implementation of the Innovation Strategy of the Czech Republic 2019–2030 (The Country for the Future) and its main objective to make the Czech Republic an innovation leader.

AI Committee as a subcommittee of the Steering Committee of the Digital Czech Republic strategy, chaired by the Deputy Minister of Industry and Trade for Digitization and Innovation. The **executive committee includes:**

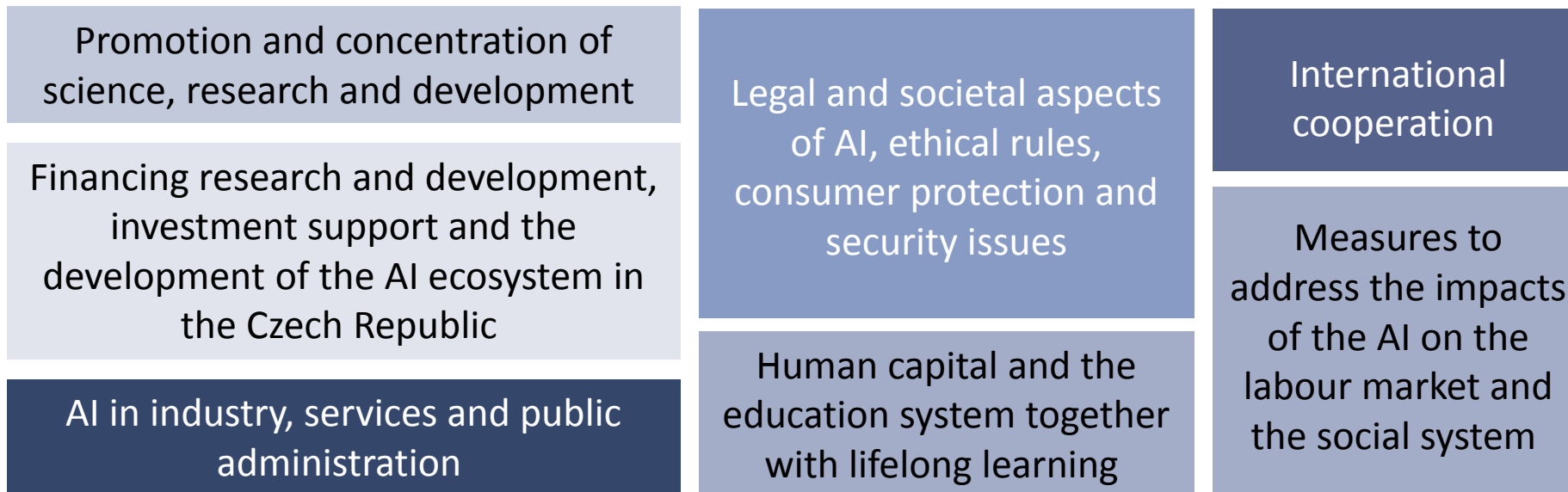
- Deputy Minister of Industry and Trade for Digitization and Innovation
- State Secretary for European Affairs
- Representative for European AI Centre



AI VISION IN CZECH REPUBLIC

A MODEL EU COUNTRY FOR AI

- The concentration of excellent research on **developing responsible and trusted AI**
- Promoting digital transformation, especially for **SMEs** and the development of **start-ups**
- Ensuring equal opportunities and benefits by **economic development for the entire society**





REGIONAL INNOVATION STRATEGIES

AI RELATED AREAS

Moravian-Silesian

- Development of the **Digital Innovation Hub** Ostrava
- Development of IT4Innovations of the national **supercomputer centre**
- Development of the "**Smart Factory**" project
- Further development of the **Subsidy Program** for Business Support and the Subsidy Program for R&D
- Preparation and implementation of the "**Smart District**" project
- Preparation and implementation of the project "**High-speed data networks**"

Karlovy Vary

- Automotive industry – **autonomous transport**
- Energy Transformation – **development of robotics**, digitization and research and development activities focused on e.g. research in the field of waste, etc.

Usti

- Digitalization, including **Smart cities and Industry 4.0** – main focus on cybersecurity, open data, big data.
- Mechanical engineering, mechatronics and automotive – main focus on industrial automation **and robotics**, additive technologies



COHESION POLICY 2021-2027

AI CAN ACCELERATE DEVELOPMENT IN ALL 5 PRIORITIES

Priority 1 – Strengthening the performance of enterprises in the field of research, development and innovation and their digital transformation

Priority 2 – Business development and competitiveness of SMEs

Priority 3 – Moving towards a low carbon economy

Priority 4 – More efficient use of resources

Priority 5 – Development of digital infrastructure



THE VISION

AI FOR ALL

While everyone is **afraid of robots and labour market turmoil today**, we are going to embrace them.

We will help all employees and self-employed persons with **retraining and acquiring new skills**.

We will ensure that **no one is left behind**, everyone is given a chance to succeed and that everyone has a **share in the benefits** of the breakthrough technology.

THE FOCUS

The State can contribute to this mainly by:

- making **data available;**
- completing **digital infrastructure;**
- supporting the **transformation of enterprises;** and
- introducing **modern public administration services.**





THE FOCUS

SEVERAL MEASURES OF AI STRATEGY ARE ALIGNED WITH REGIONAL PRIORITIES

- Introducing AI applications in public administration (Energy, Forest, Satellite);
- Employment monitoring and support / up-skilling and education;
- Human capital and the education system together with lifelong learning;
- Supporting disadvantaged groups and regions most at risk due to automation;
- Continuous assessment of impacts and preparation of the social system and measures for changes in the labour market (Not only for AI);
- International cooperation.



SMART DASHBOARD

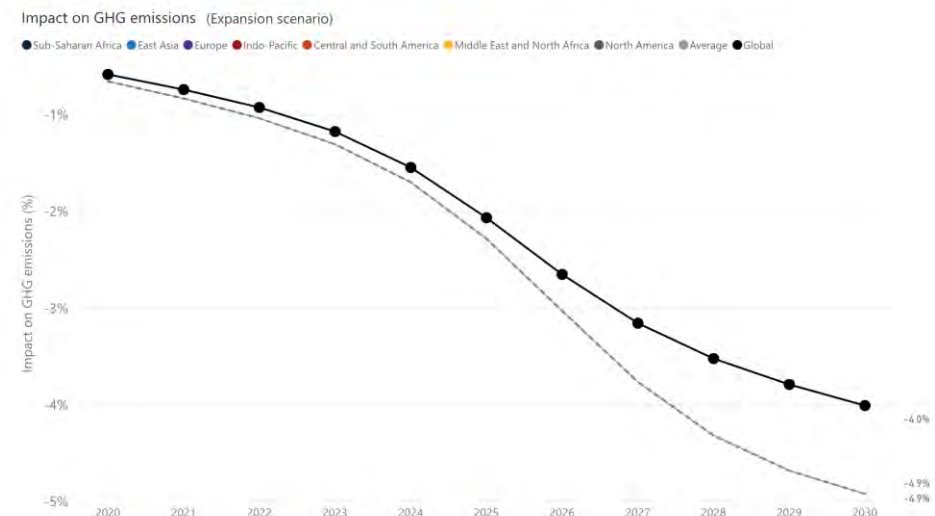
- **Analysis of the data stock** – we will be looking to both big data and small relevant data to quantify and qualify both the performance indicators and the levers;
- **Selection of KPIs**
- **Selection of data-driven levers** – automate (using machine learning techniques for big data and small relevant data) the analysis of critical areas of intervention and single out the levers to improve and scale impacts on the transition.
- **Design of dashboards** – we will advise on how to design effective data-driven dashboards taking into account various key issues.



SMART DASHBOARD

SOME EXAMPLES

Using AI for environmental applications in four key sectors* has the potential to impact global** greenhouse gas (GHG) emissions by -4.0% by 2030



Interactive analysis of [PricewaterhouseCoopers' AI for the environment report](#)

Microsoft

Expansion scenario

Impact on GHG emission %

Impact on GHG emission ,GtCO2e

Sectors*

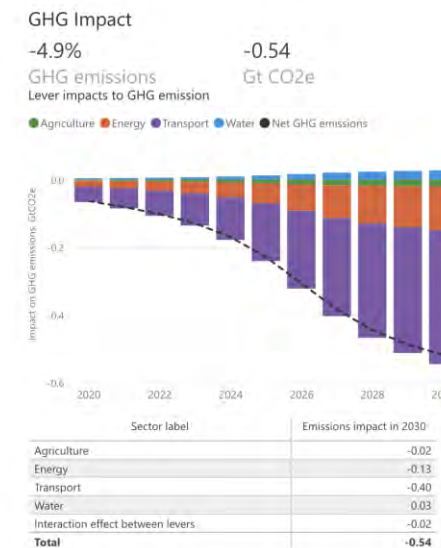
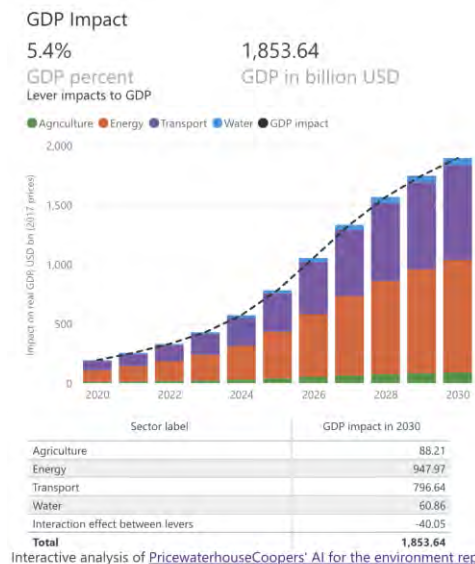
- Select all
- Agriculture
- Energy
- Transport
- Water

Regions**

- Select all
- Global
- Sub-Saharan Africa
- East Asia
- Europe
- Indo-Pacific
- Central and South America
- Middle East and North Africa
- North America

Microsoft CELA Data Science and Analytics
John Kahan, Microsoft Chief Data Analytics Officer

Using AI for environmental applications in four key sectors* has the potential to impact gross domestic product (GDP) by 5.4% and impact greenhouse gas (GHG) emissions by -4.9% by 2030 in the Europe region**



Microsoft

Expansion scenario

Sectors*

- Select all
- Agriculture
- Energy
- Transport
- Water

Regions**

- Select all
- Sub-Saharan Africa
- East Asia
- Europe
- Indo-Pacific
- Central and South America
- Middle East and North Africa
- North America

Gross domestic product (GDP) figures are reported in 2017 prices and under market exchange rates.

Microsoft CELA Data Science and Analytics
John Kahan, Microsoft Chief Data Analytics Officer

NEXT STEPS

- Map out data quality and **data stock** for decision-making;
- **One focus group** to review existing tools in use and present best practices for dashboards;
- **Interviews** to review relevance of use cases for technology and data-driven approaches for smart transition in the selected sectors;
- **One workshop** to present options for a Smart Dashboards for the JTP in Czech Republic;





SUMMARY – ENVISIONED SUPPORT OF THE PROJECT

STEP 1

- **Task 1 – envisioning digitalization opportunities for smart transition**
- Task 2A - Presentation of best practices for smart dashboards
- Tasks 3 / 4 Use case landscape per sector and per region

STEP 2

- Data quality and data stock assessment
- Design of smart dashboard
- Smart plan including AI maturity assessment report

STEP 3

- Data driven adaptive plan (long-term, not covered)

This presentation was produced with the financial assistance of the European Union. The views expressed herein can in no way be taken to reflect the official opinion of the European Union.

**THANK YOU FOR
YOUR ATTENTION**

ANNEX 5: DATA REQUIREMENT FOR E3ME MODEL

Policy inputs for scenario modelling

Important: please only account for policies that are either new or modified.

New – policies that have not been implemented by the end of 2019, but have been already announced by the time of filling out the form.

Modified – policies that have been implemented by the end of 2019, but will either (1) be abolished in the coming years or (2) their magnitude will change (e.g. announced change in capital subsidy for RES).

In the case of modified policies please indicate the timing of change or abolishment in the 'Timing' column.

Please add any policies that are important for reaching the stated targets or relevant from a financing perspective!



Name	Value	Unit	Base (if difference)	Timing	Comment
I. Emission targets					
EU target GHG reduction for Member State					
National target GHG reduction target	30.00	percentage	compared to 2005 level	by 2030	
National target GHG reduction target (if available) regional GHG targets	44.00	Mt CO2 eq	compared to 2005 level	by 2030	
Karlovy Vary Region					
Ústí nad Labem Region					
Moravian-Silesian Region					
II.a. Energy system					
Targets					
National target share of renewable energy in % gross final energy consumption	22.00	percent	gross final energy consumption total	by 2030	
National target energy efficiency improvement (final energy cons.)	990.00	PJ	final energy consumption	by 2030	
National target energy efficiency improvement (annual energy savings)	84.00	PJ		by 2030	
Additional capacity installed					
Wind		MW		by 2030	
Solar		MW		by 2030	
Biomass		MW		by 2030	
Hydro		MW		by 2030	
Carbon capture and storage (CCS) or direct air capture (DAC) capacities installed					
Policies					
Capital subsidies for renewables					
Feed-in-tariff or Feed-in-premium					
Energy tax exemptions for natural gas in transport	264.80	CZK/MWh	136.8 CZK/MWh (previous from 2020)		
State-driven large-scale capacity investments (e.g. nuclear capacity)					
Nuclear capacity investment (capacity)		MW			
Nuclear capacity investment (investment)		CZK			
Coal phase-out by		year			
...					
Financing					
Funds allocated from state budget to RES support				2020-2030	
Other sources for RES support (e.g. expected emission allowances)				2020-2030	
Emission allowances used for RES support				2020-2030	
Solidarity mechanism used for RES support				2020-2030	
Allowances in aviation sector used for RES support				2020-2030	
Investment to energy infrastructure / grid investment					
Private investment (expected)					
Public investment (incl. EU funds)					
III. Household heating / energy efficiency in households					
Targets					
RES share in gross final consumption of the sector	30.70	percent		by 2030	
Energy savings target for building stock (public & private)					
Policies					
Direct operating support for renewable heat					
Exemptions from real estate tax for geothermal energy (heatpumps, solar, biomass)					
Taxation of household fuels		million CZK		2021-2030	
Prohibition of boilers for 1st and 2nd emission class solid fuels		million CZK		2021-2030	
...					
Financing					
Sources for financing energy efficiency improvements	212.00	million CZK		2021-2030	
Private investment (expected)	72.35	million CZK		2021-2030	
Public investment (incl. EU funds)	139.65	million CZK		2021-2030	
Sources for financing RES deployment in heating		million CZK		2021-2030	
IV. Transport sector					
Targets					
RES share in gross final consumption of the sector	14.00	percent		by 2030	
Share of electric vehicles (EVs) in new car sales (and/or) Share of electric vehicles (EVs) in total fleet					
RES share in public transport / replaced feet in public transport		percent			
Policies					
Biofuel mandate					
Vehicle tax based on emissions					
Financial incentives for energy efficient and green vehicles (e.g. EV subsidy)					
Taxation of fuels				2021-2030	
Ban of certain vehicle types (e.g. based on emissions or technology) in new sales					
Financing					
Ecodriving support		million CZK		2021-2030	
Purchasing of public transport vehicles using alternative propulsion		million CZK		2021-2030	
Replacing / upgrading public transport vehicles		million CZK		2021-2030	

**ANNEX 6: DRAFT OUTLINE OF D2, UPDATED DRAFT OUTLINE OF D3 AND OUTLINE
D4**

DRAFT OUTLINE OF D2

Executive Summary

Part A: Governance Mechanism

- 1. ANALYSIS OF THE STATE OF PLAY OF GOVERNANCE MECHANISM FOR THE JUST TRANSITION AGENDA IMPLEMENTED BY MORD AND MOE**
- 2. GOVERNANCE STRUCTURES IN PLACE**
 - 2.1 RE:START
 - 2.2 Regional policy
 - 2.3 Review of efficiency and shortcomings
- 3. REVIEW OF BEST PRACTICE EXAMPLES REGARDING GOVERNANCE**
- 4. ASSESSMENT OF THE GOVERNANCE MECHANISM AS SET FOR THE JUST TRANSITION AGENDA**
 - 4.1 The role of governance in the just transition agenda, including for Pillars 2 and 3 of the JTM
 - 4.2 Representation of different sectors, balancing of different interests
 - 4.3 Coordination at different levels
 - 4.4 Decision making process
 - 4.5 Project development capacity and access to technical assistance
- 5. RECOMMENDATIONS FOR GOVERNANCE MECHANISM**
 - 5.1 Short-term/ Through-out the duration of the technical assistance project
 - 5.2 Long-term / After the completion of the technical assistance

Part B: Stakeholder Engagement Strategy

- 1. ANALYSIS OF THE STATE OF PLAY OF STAKEHOLDER ENGAGEMENT FOR THE JUST TRANSITION AGENDA IMPLEMENTED BY MORD AND MOE**
- 2. STAKEHOLDER MAPPING – CATEGORIES OF STAKEHOLDERS**
 - 2.1 Category 1
 - 2.2 Category 2
 - 2.3 Category xyz
- 3. STAKEHOLDER ANALYSIS**
 - 3.1 Review of Technical Proposal Power vs. Interest Matrix
 - 3.2 Recommendations regarding the role of different actors in various stages of the process
 - 3.3 Review of current (known) positions/ statements of stakeholders vis-a-vis the process
- 4. PURPOSE AND OBJECTIVES OF STAKEHOLDER ENGAGEMENT FOR THE JUST TRANSITION AGENDA (DRAFTING/IMPLEMENTATION)**
 - 4.1 Purpose
 - 4.2 Objective 1
 - 4.3 Objective 2
 - 4.4 Objective xyz
 - 4.5 Communication strategy
- 5. BEST PRACTICES REGARDING STAKEHOLDER ENGAGEMENT**
- 6. RECOMMENDED STAKEHOLDER ENGAGEMENT ROADMAP**
 - 6.1 Short-term/ Through-out the duration of the technical assistance project
 - 6.2 Long-term / After the completion of the technical assistance

Part C: Annexes

UPDATED OUTLINE OF D3

1. **Country introduction** - Summary based on focus areas of the EU semester report 2020; Main socio-economic parameters and challenges
2. **Progress towards climate neutrality** - key policies, existing assessment of investment needs, funding overview, governance, public consultations and involvement of public
3. **Timeline of key transition steps** – aligned with national strategies and policies
4. **Impacts of the transition to climate neutrality on Czech's economy and society**
 - Identified impacts as per NECP and long-term strategy
 - General assessment of unidentified impacts (qualitative and quantitative where possible).
 - i. Energy prices and impact on household net income and industry competitiveness
 - ii. Sectoral impacts: Energy production and future energy mix, energy imports, Heating, Transport, Agriculture, Forestry, Industry, specifically energy intensive industries, digitalisation, AI/ML, others, special focus on socially vulnerable sectors like local heating
 - iii. Effects on business – displayed on selected examples/case studies
5. **Regional analysis** – for Transition Regions
 - Identification of the main impacts and mostly affected regions and industries: Multiple-criteria matrix of quantitative and qualitative indicators
 - Evidence base and quantitative analysis at regional level for the most negatively affected territories
 - Regional analysis of relevant policies towards climate neutrality as well as to mitigate potential negative impacts
 - Priority investment needs
6. **Impacts of the activities of the Transition Regions for other regions in Czech Republic**
7. **Conclusions and recommendations for identified investment needs and for the national and territorial JTPs**

DRAFT OUTLINE OF D4

Executive Summary

1. Context

- a. *Analysis of the efforts already undertaken and their results with regard to the transition to a climate-neutral economy with an outlook on planned measures*
- b. *National process of transition to climate neutrality (Key findings to take into account from D3)*
- c. *Main impact on Transition Region for national transition to climate neutrality, key transition steps (from D3)*
- d. *Proposed governance mechanism (from D2)*
- e. *Good practices from other EU member states*

2. Just Transition Assessment for Transition Region

- a. *Assessment of the transition challenges at the political-administrative, economy and employment, environmental, socio-cultural and digital/technological level: i. State of play (where applicable: existing projects/efforts, declining/transforming sectors/key economic operators, SMEs); ii. Challenges (incl. COVID-19, absorption capacity at local level), iii. opportunities (where applicable: new projects compensating changes of transition including smart specialisation and transition); iv. applicable good practices from the EU*
- b. *SWOT analysis and strategic outlook*

3. Just Transition Action Plan for Transition Region

- a. *Type of operations needed (e.g. GHG reduction projects and other specific measures), gap analysis (e.g. job losses for non-investment vs. job creation in carbon investments) and its consistency with other operations (e.g. RE:START, JASPERS, other operational programmes), regulatory framework, innovation policy*
- b. *Contribution of the JTF support based on absorption capacity including allocations for technical assistance to tackle capacity gaps for the implementation of the JTP*
- c. *Synergies/complementarities/consistency with other programmes (EU, country context (national, regional, territorial; see above including pillars 2 and 3 as well as banking sector)*
- d. *Expected impact on measures/needs using the E3ME model and above mentioned multiple criteria mix (for D3)*
- e. *Key steps and time lines*

4. Capital raising strategy (EU level (InvestEU, EIB loans), national programmes (e.g. CMZRB), banking sector)

5. Monitoring and evaluation

- a. *Specific output & results indicators (Regional Policy Common Output/Common Result (RCO/RCA))*
- b. *Risks, prevention & mitigation (likelihood and impact of risks rated as high, medium and low)*

6. Conclusions and recommendations for identified investment needs for the Just Transition Fund

Annexes I to III: Statistical Annex, Detail of output and results indicators, Implementation matrix with roles and responsibilities, time lines, milestones (indicators)

**ANNEX 7: PROPOSAL FOR IMPACT MONITORING INDICATORS AFTER THE
CONCLUSION OF THE PROJECT**

		Table 1. Output indicators					Table 2. Result indicators										
JTF - Investment areas (Art. 4) - CZ Annex D	Policy Objective (PO)	Specific objective	ID [5]	Indicator [255]	Measurement unit	Milestone cumulative (2024)	Target cumulative (2029)	Specific objective	ID [5]	Indicator [255]	Measurement unit	Baseline or reference value	Reference year	Target cumulative (2029)	Source of data [200]	Comments [200]	
SMEs, including start-ups, leading to economic diversification and reconversion	PO 1 Smarter Europe	PO 1.iii SMEs Growth	RCO 01	Enterprises supported (of which: micro, small, medium)	Number of enterprises per category (M, S, M)			PO 1.iii SMEs Growth	RCR 01	Jobs created	Number per enterprise category (M, S, M)	0	2020				
		PO 1.iii SMEs Growth	RCO 02	Enterprises supported by grants	Number of enterprises			PO 1.iii SMEs Growth	RCR 02	Private Investments matching public support (of which grants)	Value in EUR and leverage	0	2020				
		PO 1.iii SMEs Growth	RCO 03	Enterprises supported by financial instruments	Number of enterprises			PO 1.iii SMEs Growth	RCR 02	Private Investments matching public support (of which financial instruments)	Value in EUR and leverage	0	2020				
		PO 1.iii SMEs Growth	RCO 05	Start-ups supported	Number of enterprises			PO 1.iii SMEs Growth	RCR 17	3-year-old enterprises surviving in the market	Number of enterprises	0	2020				
		PO 1.iii SMEs Growth	RCO 15	Capacity of Incubation created	Number of incubated enterprises			PO 1.iii SMEs Growth	RCR 18	SMEs using incubator services one year after the incubator creation	Number of enterprises	0	2020				
Research and innovation activities and fostering the transfer of advanced technologies	PO 1 Smarter Europe	PO 1.i R&I capacities	RCO 04	Enterprises with non-financial support	Number of enterprises			PO 1.i R&I capacities	RCR 03 and RCR 04	SMEs introducing product or process innovation and SMEs introducing marketing or	Number of enterprises	0	2020				
		PO 1.i R&I capacities	RCO 10	Enterprises cooperating with research institutions	Number of enterprises			PO 1.i R&I capacities	RCR 06	Patent applications submitted to the European Patent Office	Number of applications	0	2020				
Digitalisation and digital connectivity	PO 1 Smarter Europe	PO 1.ii Digitalisation	RCO 13	Digital services and products developed for enterprises	Number of enterprises			PO 1.ii Digitalisation	RCR 11	Users of new public digital services and applications	Number of users	0	2020				
		PO 1.ii Digitalisation	RCO 13	Digital services and products developed for enterprises	Number of enterprises			PO 1.ii Digitalisation	RCR 12	Users of new digital products, services and applications developed by enterprises	Number of users	0	2020				

		Table 1. Output indicators						Table 2. Result indicators									
JTF - Investment areas (Art. 4) - CZ Annex D	Policy Objective (PO)	Specific objective	ID [5]	Indicator [255]	Measurement unit	Milestone cumulative (2024)	Target cumulative (2029)	Specific objective	ID [5]	Indicator [255]	Measurement unit	Baseline or reference value	Reference year	Target cumulative (2029)	Source of data [200]	Comments [200]	
<i>Technology and infrastructures for affordable clean energy, in GHG emission reduction, EE/RES</i>	PO 2 Greener Europe	PO 2.i and ii. EE/RES	RCO 22	Additional production capacity for renewable energy (of which: electricity, thermal)	TWh per year			PO 2.i and ii. EE/RES	RCR 31	Total RES produced (of which: electricity, thermal)	MWh	0	2020				
		PO 2.i and ii. EE/RES	RCO 22	Additional production capacity for renewable energy (of which: electricity, thermal)	TWh per year			PO 2.i and ii. EE/RES	RCR 32	Capacity connected to the grid (operational)	MWh	0	2020				
		PO 2.i and ii. EE/RES	RCO 22	Additional production capacity for renewable energy (of which: electricity, thermal)	TWh per year			PO 2.i and ii. EE/RES	RCR 30 (not in Annex III)	Enterprises with improved energy performance	MWh	tbc	2020				
<i>Regeneration and decontamination of sites, land restoration and repurposing projects</i>	PO 2 Greener Europe	PO 2. vii Urban environment	RCO 38	Surface area of rehabilitated land support	km ²			PO 2. vii Urban environment	RCR 52	Rehabilitated land used for green areas, social housing, economic or community activities	km ²	0	2020				
		PO 2. vii Urban environment	RCO 39	Systems for monitoring air pollution installed	Number of inhabitants reached			PO 2. vii Urban environment	RCR 50	Population benefiting from measures for air quality	Number of population	0	2020				
<i>Circular economy, including through waste prevention, reduction, resource efficiency, reuse, repair and recycling</i>	PO 2 Greener Europe	PO 2. vi Circular Economy	RCO 34	Additional capacity for waste recycling	Tonnes per year			PO 2. vi Circular Economy	RCR 46	Population served by waste recycling facilities and small waste management systems	Number of population	0	2020				
		PO 2. vi Circular Economy	RCO 34	Additional capacity for waste recycling	Tonnes per year			PO 2. vi Circular Economy	RCR 47	Waste recycled	Tonnes	0	2020				
		PO 2. vi Circular Economy	RCO 34	Additional capacity for waste recycling	Tonnes per year			PO 2. vi Circular Economy	RCR 48	Recycled waste used as raw materials	Tonnes	0	2020				
		PO 2. vi Circular Economy	RCO 34	Additional capacity for waste recycling	Tonnes per year			PO 2. vi Circular Economy	RCR 49	Waste recovered	Tonnes	0	2020				

		Table 1. Output indicators						Table 2. Result indicators								
JTF - Investment areas (Art. 41 - CZ Annex D)	Policy Objective (PO)	Specific objective	ID [5]	Indicator [255]	Measurement unit	Milestone cumulative (2024)	Target cumulative (2029)	Specific objective	ID [5]	Indicator [255]	Measurement unit	Baseline or reference value	Reference year	Target cumulative (2029)	Source of data [200]	Comments [200]
Upskilling and reskilling of workers	PO 1 Smarter Europe	PO 1.iv Skills smart specialisation	RCO 101	SMEs investing in skills development	Number of SMEs			PO 1.iv Skills smart specialisation	RCR 97	Apprenticeships supported in SMEs	Number of Apprenticeships	0	2020			
		PO 1.iv Skills smart specialisation	RCO 101	SMEs investing in skills development	Number of SMEs			PO 1.iv Skills smart specialisation	RCR 98	SME staff completing CVET (by type of skill: technical mgmt, entrepreneurship, green, other)	Number of SME staff that have completed CVET (by type of skill)	0	2020			
Job-search assistance to jobseekers Active inclusion of jobseekers	PO 4 Social Europe	PO 4.i Social innovation and employment infrastructure	RCO 200 - RCO 209 *)	Track participants from different categories, including the split by gender *)	Number of participants			PO 4.i Social innovation and employment infrastructure	RCR 200 - RCR 203 **)	Track participants from different categories, including the split by gender **)	Number of participants	0	2020			
Technical assistance	PO 1, PO 2 and PO 4	All specific objectives targeted by the JTF	tbc	Technical Assistance Budget assigned	Value in EUR			All specific objectives targeted by the JTF	tbc	tbc	Value in EUR	0	2020			
Large enterprises	PO 1 Smarter Europe	PO 1.iii SMEs Growth	RCO 01	Enterprises supported (of which: large)	Number of enterprises			PO 1.iii SMEs Growth	RCR 01	Jobs created	Number of jobs created	0	2020			
EU ETS installations (activities listed in Annex I to Directive 2003/87/EC)	PO 2 Greener Europe	PO 2.i and ii. EE/RES	RCO 120	Enterprises supported to achieve the reduction of GHG emissions from activities of EU ETS installations	Number of enterprises supported			PO 2.i and ii. EE/RES	RCR 29	Estimated GHG emissions from activities of EU ETS enterprises supported	CO ₂ reduction	tbc	2020			

*) RCO 200 - unemployed, including long-term unemployed
 RCO 201 - long-term unemployed
 RCO 202 - inactive
 RCO 203 - employed, including self-employed
 RCO 204 - below 30 years of age
 RCO 205 - above 54 years of age
 RCO 206 - with lower secondary education or less (ISCED 0-2)
 RCO 207 - with upper secondary (ISCED 3) or post-secondary education (ISCED 4)
 RCO 208 - with tertiary education (ISCED 5 to 8)
 RCO 209 - total number of participants (to be calculated automatically, related to employment status)

**) RCR 200 - participants engaged in job searching upon leaving
 RCR 201 - participants in education or training upon leaving
 RCR 202 - participants gaining a qualification upon leaving
 RCR 203 - participants in employment, including self-employment, upon leaving