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**MITIGATING CLIMATE CHANGE
THROUGH ATTRACTING FOREIGN DIRECT INVESTMENT
IN ADVANCED FOSSIL FUEL TECHNOLOGIES**

Project funded by the UN Development Account

Economic Commission for Europe

In cooperation with

Economic and Social Commission for Asia and Pacific

Department of Economic & Social Affairs

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1. EXECUTIVE SUMMARY

PROJECT TITLE: **Mitigating climate change through attracting foreign direct investment in advanced fossil fuel technologies**

DURATION: THREE Years (2010 – 2012)

PARTICIPATING COUNTRIES: Afghanistan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Ukraine, and Uzbekistan

EXECUTING AGENCY: UNECE

CO-OPERATING AGENCIES: UNESCAP – UNDESA and UNCTAD

NATIONAL COUNTERPARTS: GOVERNMENTAL ENTITIES, MINISTRIES OF FINANCE, INDUSTRY, ECONOMY, ENERGY, ELECTRICITY AND COAL, CENTRAL BANK

FUNDING FROM DEVELOPMENT

ACCOUNT: \$ 629,900

APPROVED BY THE GA: Sixty-fourth Session, A/64/6 (Sect. 35)

PROJECT SUMMARY:

To improve the development prospects and to move to a more sustainable energy and economic development process in economies in transition and emerging market economies in the UNECE region as well as in similar countries in Asia, which are confronted with the lack of investment in a cleaner electricity production from coal and other fossil-fuels with all negative consequences, the project targets to enhance the governments' ability to attract FDI in advanced fossil fuels technologies for electricity production. Through a close cooperation with the countries concerned and in the framework of a desirable investment framework, a series of interactive events and the use of local experts, the projects focuses of facilitating the increased mobilization of financial resources for cleaner power sector. In turn those investments would all act as catalysts for the enhanced energy security and low-carbon sustainable development.

2. BACKGROUND

2.1 Introduction

1. Mitigation climate change will not only require de-carbonizing the global economy through the promotion of cleaner advanced energy technologies but also steadily increased efficiency in using fossil fuels in electricity generation, which dominates all world final energy consumption, except in transport sector. Intergovernmental consultations at 15th session of the Commission on Sustainable Development (CSD-15) have shown that fossil fuels will continue to be the largest energy source in many developing countries in coming decades. At the same time, countries emphasized the importance of developing and deploying advanced energy technologies, which enable use of countries' fossil energy resources, in particular coal for electricity, in a manner that is compatible with climate change mitigation. The challenges are to attract the investment necessary to support the transition to a more efficient electricity sector, largely based on burning fossil fuels and therefore to a low carbon economy.

2. The sheer magnitude of required investment in the cleaner electricity production necessitates capital flows both from domestic and foreign sources. Understandably, a particular attention has been paid to foreign direct investment (FDI). FDI has many potential benefits including financing capacity expansion without incurring debt, supporting cleaner technology and knowledge transfer, and acting as a catalyst for further capital inflows. Despite considerable efforts to attract FDI in the last several years, actual levels of FDI into the power and coal sectors in many countries with an economy in transition have been moderate at best. The mobilization of the necessary capital resources, however, will require an attractive investment climate: a business friendly environment, favourable macro-economic performance and a regulatory environment that is predictable, fair, transparent and efficient. Thus it is critical to support both the evolution of the economic, legal and regulatory frameworks that underpin an attractive investment climate whilst also developing the financial skills of government and corporate officials and facilitating their interface with prospective investors in the cleaner electricity production based on fossil fuels, in particular coal.

3. In addition to renewable sources and energy efficiency, advanced fossil fuel technologies such as the state-of-the-art power plant design and technology, coal gasification, underground coal gasification and coal liquefaction, could play an important role in meeting the growing energy needs, in particular of electricity, of the economies in transition. These technologies are more effective as well as more environmentally friendly than the techniques currently present in those countries. Together with carbon capture and storage technologies, which would be normally applied at a later stage, when the proper conditions are met, they could make a critical contribution to the availability of affordable and cleaner electricity as well as to the transition to low carbon economy. It is, therefore, critical that future infrastructure needs support sustainable fossil-fuel-based electricity development, and this should be woven into the investment framework.

4. The following developing and countries with economies in transition, which rely to a considerable degree on domestic coal including the electricity production and have expressed interest in international sharing of experience in the development of their coal based electricity and energy sectors, would be invited and interested to participate: Afghanistan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Ukraine, and Uzbekistan. Bearing in mind that the targeted countries are diverse in terms of energy and electricity production, FDI's attraction and clean power technologies already employed, the project

approach will differentiate China and to some extent India from the rest of the countries. However, to the extent possible, a regional approach would be taken to optimize resources, encourage cross-fertilization, and build partnerships among regional and international experts. That's why selected inputs of the ESCAP's staff could contribute to the execution of some parts of the project.¹

5. Implementing Arrangements: ECE will be the lead executing agency while it would solicit the cooperation of DESA and ESCAP on selected parts of the project. Other partners will be invited to participate in the project as needed. Given UNCTAD extensive experience in Foreign Direct Investment (FDI), the executing agency and cooperating agencies will invite UNCTAD to contribute to the project. The UNECE has proven expertise in this area through its involvement in the substantive work of the Ad Hoc Group of Experts on Cleaner Electricity Production from Coal and Other Fossil Fuels and the project, *Capacity Building for Air Quality Management and the Application of Clean Coal Combustion Technologies in Central Asia* funded by the fourth tranche of the UN Development Account. In addition, UNECE also has been also involved in the work of the Ad Hoc Group of Experts on Coal Mine Methane which has assumed the global leading role in this increasingly important area.

6. At the same time, the UNDESA provided some advisory services on clean coal technologies while ESCAP has also conducted a number of activities in energy and coal which could eventually be relevant to this project.

2.2 Link to the Programme Budget

7. The proposal is consistent with the:

- UNECE Strategic Framework for the period 2010- 2011, Subprogramme 5: Sustainable energy;
- UNDESA approved Programme of Work Subprogramme 4: Sustainable Development, paragraph 9.58 (c);
- ESCAP Strategic Framework 2010-2011 Subprogramme 4: Environment and Development;

8. The project and the Protocol are directly linked to the Millennium Development Goals (MDGs), and major UN conferences and summits in particular to:

- MDG 7: Ensure Environmental Sustainability, Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.
- MDG Indicator 28: Carbon dioxide emissions (per capita).

¹ The initial considerations on implementing partners of the project also included UNCTAD for selected targeted Asian countries but after careful joint assessment of the United Nations regional commissions it became clear that ESCAP had superior reach and insights into this very specific energy issues. Certainly, if need be the implementing partners could at a later stage involve UNCTAD, which does not seem likely at the moment.

- UN Framework Convention on Climate Change and Kyoto Protocol Commission on Sustainable Development 14 and 15: Energy for Sustainable Development.

2.3 Lesson Learned and Good Practices

9. During its work on coal and electricity in the last several decades, the UNECE has accumulated substantial experience on the key contemporary trends in particular through the work of the UNECE Ad Hoc Group of Experts (AHGE) on Cleaner Electricity Production from Coal and Other Fossil Fuels. The major findings of the UNECE Ad Hoc Group of Experts indicate that:

- The potential for deploying the state-of-the-art technologies in producing electricity from coal and other fossil fuels which would lead to a higher energy efficiency, lower electricity prices conducive to a faster and more equitable economic development and decreasing CO₂ emissions across the world in considerable.
- The same potential in economies in transition and emerging market economies is even much bigger, given very low efficiency in the electricity sector which does not favour industrial and economic development as well as the respect of environment.
- Capital is, in principle, available for investment in cleaner electricity infrastructure in the world markets but it is barely reaching economies in transition and emerging market economies, because current laws and/or regulations in certain countries are unclear or inadequate to provide visibility, reasonable chance of making the investment profitable and satisfactory assurances on the security of the invested capital stock to related investors.
- Based on information provided by national and international experts, it is apparent that in economies in transition and emerging market economies any further delay in introducing transparent and predictable regulatory framework as well as in relying on sound policymaking or rule issuance related to the electricity sector and fossil fuels will result in postponement of the much needed cleaner electricity investment.
- While in the advanced market economies, multiple cleaner electricity demonstration projects needed to be initiated in the near future to meet timetables regarding the carbon capture and storage technologies and highly-efficient technologies for the conversion of fossil fuels into cleaner electricity, as previously announced by those governments, the challenge in economies in transition and emerging market economies has more to deal with closing the already existing technological, operational, environmental, cost and financial gap when compared with the advanced market economies, with regard to the use of coal and other fossil fuels in electricity generation.
- While generally the governments of the advanced market economies have acknowledged the need for selected public funding of these critical electricity projects focusing on carbon capture and storage technologies and highly-efficient technologies for the conversion of fossil fuels into cleaner electricity, still in many cases the public funding has been delayed. At the same time, the weak capital

markets, the lack of clear energy policy and the absence of the required regulatory and investment frameworks have acted as a drag on any substantial investments in cleaner electricity production in economies in transition and emerging market economies in general.²

- The information provided by the UNECE and other UN member-states to the UNECE Ad Hoc Group of Experts (AHGE) on Cleaner Electricity Production from Coal and Other Fossil Fuels confirm the existence of numerous national and individual corporate plans for fostering cleaner electricity production from coal and other fossil fuels. However, those plans have been transformed into reality with a varying success in the UNECE region with economies in transition and emerging market economies in general lagging behind in every respect.

3. ANALYSIS

3.1 Stakeholder analysis

10. The proposed project will greatly benefit the economies in transition in the UNECE region and emerging market economies in Asia since it will foster the adoption of a favourable policy and regulatory framework for the attraction of domestic and, in particular, foreign direct investments in cleaner electricity production from coal and other fossil fuels. The much needed investment would increase the electricity production efficiency, reduce its cost, strengthen national industrial and economic competitiveness and set the countries on the path for a sustainable and more-environmentally friendly development. Of the countries considered, certainly Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan with the common grid have the most issues in common although their power generation base and trade profile greatly vary. Ukraine shares partially joint technological base with the four countries from Central Asia but with its huge power production and export potential it is potentially well-placed to attract required investments. However, many regulatory and policy obstacles remain. While being probably the most advanced in the application of selected clean power generation technologies, China's needs are overwhelming. With similar needs but with the less advanced electricity infrastructure and use of clean power technologies, India is another major focus of the project. At the same time, Mongolia which borders China has substantial power capacity and large coal reserves which still need to result in large investments in clean power technologies. Finally, the situation of the war-torn Afghanistan is very specific and the project will pay due attention to those circumstances. In summary, despite considerable differences in their power systems, all targeted countries are in need of significant foreign and domestic investments to employ advanced clean power generation technologies with all related benefits. While UNECE and other implementing partners are actively working on furthering the state of energy security, energy efficiency, energy networks interconnections and other related issues in this area, the purely investment and regulatory component of power generation will be addressed by this project.

11. The immediate target groups of the project are experts, government officials, private enterprises, NGOs and academia, who deal with all aspects of cleaner electricity production

² It is fair to say that while China has made a considerable progress in deploying more advanced fossil fuel-based electricity technologies in recent years, the required investments and the improvements in efficiency and impact on environment are of an enormous scale.

from coal and other fossil fuels: regulatory, policy, competitiveness, technological and financial.

12. In the interaction with the UNECE experts, international electricity industry executives, leading technology vendors and investors, the recipient countries are set to enhance their ability and skills to promote the sustainable energy and economic growth through the design of favourable investment and growth policies in the electricity and energy sector resulting in the increased investments and wide-spread benefits for the national economy.

13. The project will also address gender concerns by promoting women participation in all project activities.

3.2 Problem analysis

14. The current situation in the electricity production based on coal and other fossil-fuels in economies in transition and emerging market economies in the UNECE region as well as in similar countries in Asia in principle does not favour large domestic and foreign investments in advanced and highly efficient electricity production. In general there are:

- lack of skills in those countries to develop and maintain attractive investment climate to encourage sizeable domestic and foreign investment into the sector;
- inefficient know-how for development of credible pre-feasibility studies for the energy projects in general and in particular of those that deal with advanced technologies and large investment amounts, and
- poor cooperation between domestic policy makers and regulators, if any, with actual and potential investors on introducing not only the state-of-the-art techniques in the electricity production based on coal and other fossil-fuels but also in achieving the steady increase in efficiency in the sector and reducing its negative impact on the environment.

15. The summary outcome of those deficiencies present in economies in transition in the UNECE, with regard to domestic and foreign investments in advanced and more efficient electricity production from coal and other fossil fuels, is the absence of large foreign direct investments in more advanced fossil fuels technologies leading to a low-carbon sustainable energy and economic development.

16. In turn, such circumstances have reinforced or translated into inadequate mobilization of local financial resources for a power sector, incoherent regulations for both domestic and FDI in power sector, very limited capacity of governments and local corporate officials to foster and enhance in particular FDI as well the absence of the application of advanced fossil fuel technologies in cleaner electricity production. Such course of developments is directly responsible for the low efficiency in energy and power sectors, reliance on high-carbon economy and the ultimate low industrial and economic competitiveness with all negative economic and social consequences including on environment and health.

3.3 Analysis of the objectives

17. The afore-described issues with the lack of investment in a cleaner electricity production from coal and other fossil-fuels in economies in transition and emerging market

economies in the UNECE region as well as in similar countries in Asia, with all negative economic and social consequences, require an immediate attention. To improve the development and environmental prospects and to move to a more sustainable energy and economic development process those countries would need to:

- improve skills to develop and maintain attractive investment climate to encourage FDI to power sector;
- strengthen the cooperative relations between policy makers and investors, in particular the foreign ones,³
- enhance their know-how and skills to develop pre-feasibility studies for cleaner electricity production from coal and fossil fuels as well as the energy projects in general.

18. Those efforts would in due course result into the increased FDI in advanced fossil fuels technologies for electricity production to support energy security and low-carbon sustainable development. The resulting increased mobilization of financial resources for power sector, the strengthened capacity of government and corporate officials to attract in particular FDI in the electricity generation, ultimately the increased even gradual application of advanced fossil fuel technologies and a favourable regulation for FDI in power sector would all act as catalysts for achieving low level of carbon emissions, increased efficiency in the energy and power sectors and the enhanced industrial and economic competitiveness.

19. The positive economic and social impact including on environment and health from undertaking such a course of action in fostering cleaner electricity production from coal and fossil fuels would be a crown of all other mentioned substantial benefits that economies in transition and emerging market economies in the UNECE region as well as in similar countries in Asia would receive in the years to come.

³ This process should include the consideration of the regional approach for bigger clean energy projects to make investments more attractive.

Figure 1. Problem Tree

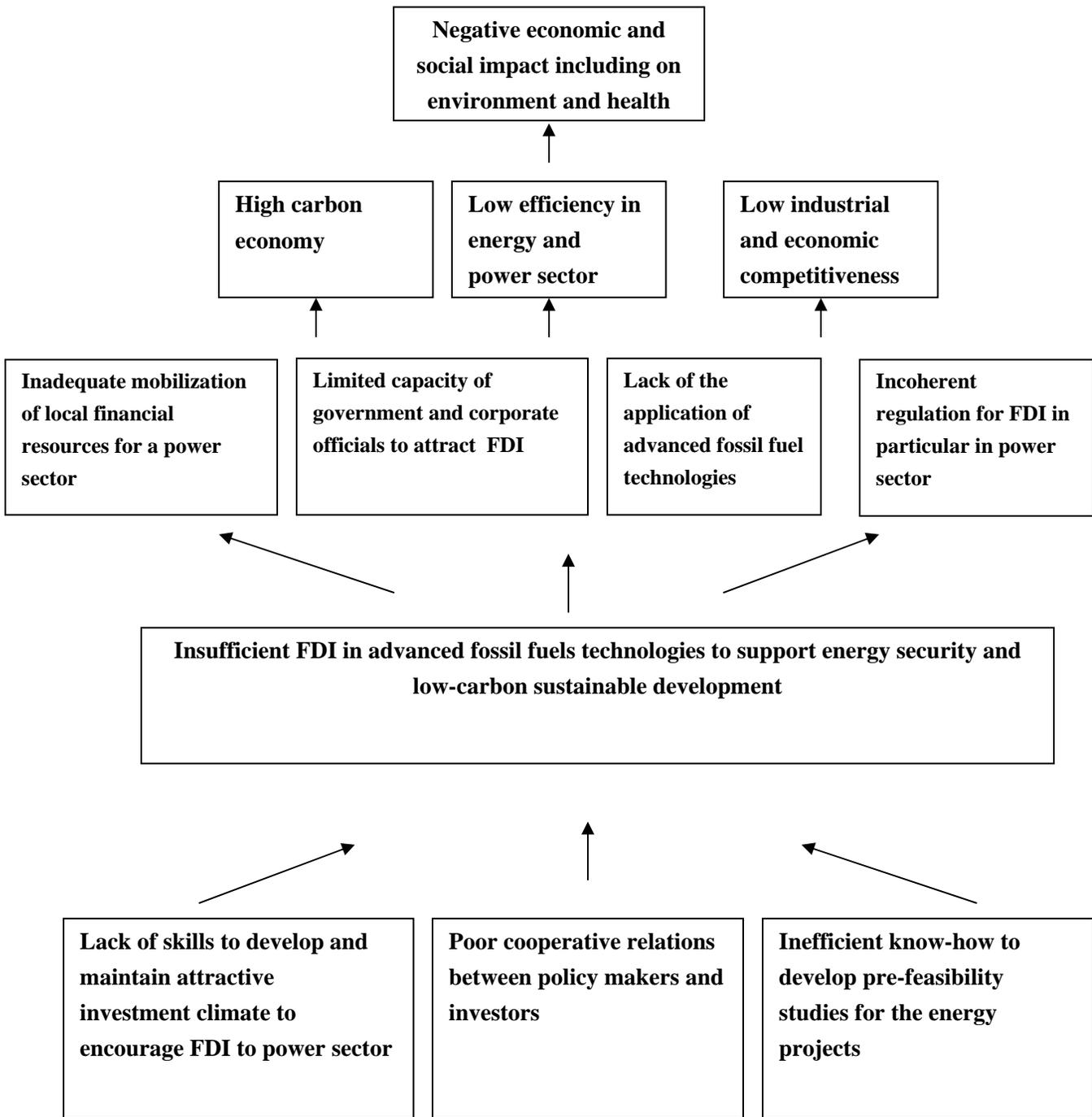
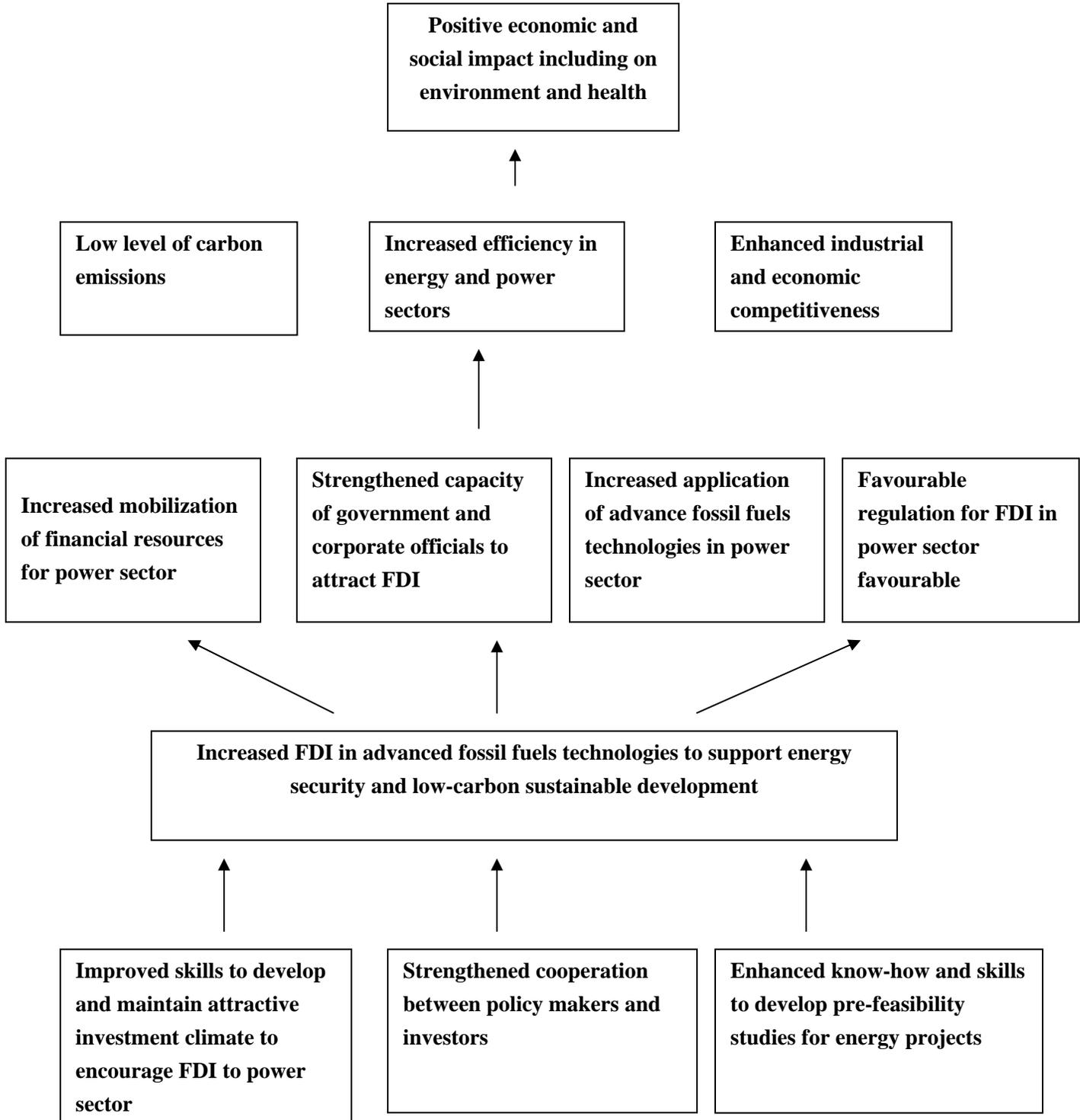


Figure 2. Objective Tree



4. PROJECT STRATEGY: OBJECTIVE, EXPECTED ACCOMPLISHMENTS, INDICATORS AND MAIN ACTIVITIES

4.1 Objective

20. The overall goal of this project is to enhance the capacities of economies in transition and emerging market economies in the UNECE region as well as in similar countries in Asia, to attract FDI into advanced fossil fuels technologies for electricity generation with a view to supporting industrial and economic competitiveness, ensuring energy security and achieving low-carbon sustainable development.

4.2 Expected accomplishments

EA1 Increased skills to develop and maintain an attractive investment climate to encourage foreign direct investment into power sector based on coal and other fossil fuels to meet the growing demand for electricity and achieving related climate change goals in countries with economies in transition.

EA2 Improved cooperative relationships between energy policy makers in countries with economies in transition and investors which should allow development of a better understanding, on the one hand, what foreign investors could bring and under which conditions in a rapidly changing energy, technology and financial environment and, on the other hand, what is the genuine electricity investment absorption capacity of each individual country in a given moment of time.⁴

EA3 Increased skills to develop pre-feasibility studies on the power sector and related fossil fuels projects in each targeted country.

4.3 Indicators of achievement⁵

IA1 The creation of long-term human capital expressed as the number of institutions as well as regional, national and local officials who are able to design and implement effective and enabling legal/regulatory frameworks supporting foreign direct investment into cleaner electricity production from coal and other fossil fuels by 2012.

IA2 Number of networks established by 2012 amongst regional officials in countries with economies in transition and emerging economies in the UNECE region and similar countries in Asia and with the investment community to encourage foreign direct investment into advanced electricity generation fossil fuel-based technologies

IA3 The establishment of the long-term power generation investment blueprint for the countries concerned, expressed as the number of pre-feasibility studies, which will serve as, produced by 2012 for the advanced cleaner electricity generation based on coal and other fossil-fuels developed in each targeted country for investors' consideration.

⁴ The considerable information asymmetry between foreign investors and recipient countries is considered as a major obstacle for bigger investment inflows in transition and emerging market economies.

⁵ The indicators of achievements in the project are conceptualized according the UNDA SMART indicators criteria: specific, measurable, achievable and attainable, realistic and relevant and time bound.

4.4 Main activities

21. The main activities of the project will include:

For EA1:

- A.1.1. Develop a project baseline and a comparative analysis for each targeted country with regard to electric power generation status and infrastructure, the possibility to apply advanced electricity and related fossil energy technologies, including on domestic and foreign investment, programmes and policies in place to seek and encourage investment, and cooperation amongst participating countries.⁶ This activity clearly seeks to establish a benchmark against which the power generation investment and regulatory framework and climate in each individual participating country will be measured. Equally, in this process a ranking of each country in terms of the obstacles and opportunities to move closer to the desired benchmark in alternative and realistic time frameworks.
- A.1.2. Develop and arrange five workshops within the region to allow for networking amongst officials in the region to exchange ideas and to:
 - (i) share with them the results of the baseline study and comparative analysis, which would allow them to develop a better understanding of their positioning in the international investment market for power generations both in absolute and relative terms
 - (ii) provide knowledge on foreign direct investment into advanced electricity and related fossil fuel-based energy technologies, which concerns both the regulatory and policy requirements and purely technical aspects that a country would need to deal with when attracting and implementing investments based of foreign capital as well
 - (iii) collaborate with officials in the region and where appropriate with other countries in order to identify the required or desirable changes to existing policy/legal/regulatory frameworks leading to a more favourable investment climate for the power generation projects based on cleaner fossil fuel technologies.

For EA2:

- A.2.1. Provide technical assistance to the national officials through two or more broad-based technical training workshops, to educate them on technical and policy options for cleaner electricity production. This is indeed a critical activity since the policy-makers and other government officials are not necessarily updated on the current technological and related economic status of the advanced power generation technologies, which in turn might require particular regulatory, policy and structural measures to be the most effective in local conditions.

⁶ While ECE and other implementing partners have substantial data already available on the matter, the dynamic nature of the power generation markets and related government policies as well as a very detailed nature of the project would require considerable additional effort to build a consistent and country-comparable baseline data.

For EA3:

- A.3.1. Provide technical assistance to national experts to develop pre-feasibility study on advanced and cleaner electricity generation and related fossil fuels-based energy project in each country (9 countries). The development of pre-feasibility studies is not only a technical process focusing on the technological, financial and risk elements of an individual power generation investment undertaking but would also need to deal with a careful evaluation of all concerned regulatory and policy elements. Those elements normally impact considerably the probability of the investment attracted at all as well as the expected investment project performance during its duration.
- A.3.2. In cooperation with officials from the region, plan and execute an end-of-the-project workshop in or near the Eastern European/Central Asian region, involving all nine countries, with the intended objective of bringing together officials from the region along with major domestic and foreign investors to encourage greater investment flows into a cleaner power sector in countries with economies in transition. Coupled with other project actions, this particular activity would be an exceptional opportunity to create an efficient interface among the foreign investors, technology vendors, domestic policy makers and regulators as well as the domestic power generation industry, which would further foster the flow of much required investment in an informed and productive framework for mutual benefit. The workshop should endorse the suitable regulatory and policy approaches for power generation, discuss the examples of the planned or under way investments and ways to enhance their attractiveness, their impact on economic development and mitigation of climate change as well as reinforce the creation of needed stock of human capital in this critical economic activity.

5. PROJECT MONITORING AND EVALUATION

22. The UNECE secretariat will report regularly on the project progress to the UNECE Ad Hoc Group of Experts on Cleaner Electricity Production from Coal and Other Fossil Fuels as well as the UNECE Committee on Sustainable Energy, as its parent body, during their annual session. The report on the project progress would be submitted both to the UNECE Ad Hoc Group of Experts on Cleaner Electricity Production from Coal and Other Fossil Fuels and the UNECE Committee on Sustainable Energy.

23. To insure its efficient functioning, the project will have a small Advisory Board chaired by the Chairman of the UNECE Ad Hoc Group of Experts on Cleaner Electricity Production from Coal and Other Fossil Fuels. It will include a number of reputed industry and government experts and representatives.

24. The Advisory Board will recommend to the UNECE an independent project evaluation officer who will provide the final project evaluation report to UNECE Ad Hoc Group of Experts on Cleaner Electricity Production from Coal and Other Fossil Fuels.

6. GENDER CONCERNS

25. While this project is aimed at bringing society-wide benefits, a particular attention would be paid to the gender balance in its preparation and execution. Since the project deals with the power industry in which women are traditionally less represented, during its preparation and execution a due care will be exercised in contributing to the restoration of the gender balance.

26. In this respect, in the choice of the local participants, the UNECE will ensure that all participating governments are requested to promote the right gender balance in all project activities and that related regulatory and policy knowledge is equally available to both qualified men and women in each country. This way from the beginning the UNECE project strategy and its results framework will address the present gender inequalities and try to promote the wider participation of women in all power generation investment and policy processes.

7. EXTERNAL FACTORS AND RISKS

27. The key external factors for a good project implementation are the policies of the targeted UNECE member states and designated governments in Asia, as well as their specialized regulatory agencies, local electricity companies and national energy experts. The international investors and electricity and general energy companies are additional key factors for the successful execution of the project.

28. The implementation of the project does not include considerable risks. The technologies, regulation and policies discussed are in the public domain and as such do not contain anything which could provoke a controversy both for the project execution and its effects. While possible political instability in selected countries could not prevent the participation of the government and energy sector experts in most of the project activities, it could delay the effective implementation of the project recommendations and the attraction of the desirable investment, which is out of the immediate scope of the project.

8. IMPLEMENTATION ARRANGEMENTS

29. The project will be executed by the UNECE.

30. The UNECE will solicit the cooperation of experts from UNDESA and UNESCAP on selected parts of the project.