## Annex 1. Project Logical Framework and Theory of Change

* 1. Project Logical Framework

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| **LOGICAL FRAMEWORK for GREEN ECONOMIC DEVELOPMENT PROJECT** |
|  | **Intervention logic** | **Objectively verifiable indicators of achievement** | **Sources and means of verification** | **Assumptions**  |
| **Overall goal** | The overall objective is to create a favorable environment for investing in EE/RES infrastructure measures in BiH. | Number of infrastructure projects directly and indirectly benefiting from improved of financing mechanisms in BiH for EE investments (target value: 154). | Official project-related reports from BiH authorities at cantonal/entity/state levels.Project reports. |  |
| **Outcome / Strategic objective** | SO1a: To develop capacity and strengthen skills of Environmental Fund staffSO1b: To develop capacity and strengthen skills of energy professionals SO2: To establish energy monitoring and reporting mechanisms in BiHSO3: To enable financing for EE/RES infrastructure projects in BiH SO4: To implement cost-optimal, green jobs generating and emission reducing EE/RES infrastructure projects in BiHSO5: To increase general public’s understanding of EE/RES benefits SO6: To provide access to energy for off grid households in BiH | SO1a: Number of detailed energy audits assessed, prioritized, and ranked by Environment Funds (target value: 120).SO1b: Number of energy stakeholders participating on training programme for skills and knowledge development on EE and RES (NZEB) (target value: 600)SO2: Number of municipal authorities with reporting mechanisms in place (target value: 90).SO3: % of increase of financial resources allocated for EE measures through the Fund by the end of 2020 (target value: 40%).SO4: Number of effectively implemented EE/RES infrastructure projects (target value: 54).SO5: Number of people reached through marketing campaign (target value: 167.000)SO6: Number of households provided with RES solution in off grid areas in BiH (target value: 24) | Project reports and relevant technical/tender documentation.Public media coverage; information posted on websites of local/cantonal/entity/state authorities in Bosnia and Herzegovina. | Environmental Funds have internal capacities and capabilities to manage and continue to operationalize energy efficiency thematic area within the Fund.Environmental Funds continue to finance EE/RES projects offering various financial mechanisms/modalities (performance-based grants, loans, ESCO Fund window) and thus reduce risks for investors and financial institutions.Energy monitoring and reporting mechanisms are replicated and applied as a harmonized system country-wide.Energy professionals and companies are aware of norms and standards and invest into knowledge and skills development.EE/RES infrastructure measures generate significant number of “green jobs”.The general public is aware that EE/RES is an economic/development driver. |
| **Output / Result**  | Result 1: 260 detailed energy audits of public sector buildings drafted and assessed for EE/RES infrastructure investmentsResult 2: EMIS is implemented and continuously updated in BiH municipalities Result 3: Financial mechanisms and modalities for EE/RES investments within Environmental Funds are established and operationalResult 4: In at least 54 EE/RES infrastructure measures have been implemented with EU required technical standards.Result 5: Public awareness on benefits of energy efficiency, renewable energy, NZEB, energy management and reduction of emissions to air is increased.Result 6: At least 24 off grid households in remote areas in BiH provided with thermal heat/electricity | * 1. Number of detailed energy audits conducted (target value: 120)
	2. Number of investment decisions made based on evaluation of detailed energy audits (target value: up to 15 annually)
	3. Number of Fund staff participating on annual capacity development training on energy efficiency, EMIS and EE/RES policy (target value: 12)
	4. Number of Fund staff actively working on EMIS investment decision making process cycle, monitoring, assessing and evaluating energy indicators (target value: 6)
	5. Number of stakeholders participated on training programme for energy management, skills, and knowledge development and NZEB (target value: at least 200 annually)
	6. Number of female energy professionals participated on training programme for skills and knowledge development and NZEB (target value: at least 40 annually)
	7. Number of Energy intensity mapping applications developed (target value:1)
	8. Measurement and verification (M&V) module within EMIS enabled
	9. Nearly Zero-Energy Public Buildings integrated into EE/RES by-laws in BiH
	10. Number of cost-optimal analysis for public buildings developed (RS, FBiH, BiH) (target value:3)
	11. Number of public sector buildings monitored through EMIS database (target value: 7000)
	12. Number of end-users trained on EMIS (out of which at least 40% women) (target value: 7000)
	13. Number of EE/RES infrastructure projects implemented with non-grant (ESCO, performance based granting and loans) co-financing modality (target value: 18)
	14. Number of implemented EE/RES infrastructure projects in public sector buildings (target value:18 annually)
	15. % of total energy consumption savings within implemented public sector buildings (target: more than 65%)
	16. Achieved energy class of public sector buildings after EE/RES infrastructure measures (target: energy class “A”)
	17. % of total energy cost savings (target value: 50%)
	18. Amount of direct CO2 emission reduction (target value: 3900)
	19. Number of generated man-months “green jobs” (target value: 425)
	20. Number of women as direct beneficiaries of EE/RES project benefits (target value: 10800)
	21. Media campaign outreach (out of which at least 40% women) (target value: 100000)
	22. Number of awareness raising events held in BiH (target value:45)
	23. Number of promotional materials distributed (target value:50000)
	24. Number of persons benefiting from RES solutions (target value:50)
	25. Number of female benefiting from RES solutions (target value: 30)
 | Source 1: Project reports and relevant technical documentation (all indicators);Source 2: EMIS – official report by Fund to Government (indicators 2.1., 4.1., 4.2., 4.3., 4.4., 4.5.);Source 3 – Energy Community Reports on BiH (indicators 3.1., 4.1., 4.2., 4.3., 4.4., 4.5.)  | Fund’s senior management is commitment to enforce EE/RES thematic area within the Fund.Fund’s employees motivated to develop and gain additional skills and apply them in daily routine work.Sub-national level authorities and municipalities are interested to gain capacity and skills in order to absorb Law on EES obligations and required activities related to energy monitoring and reporting.Energy professionals/ construction companies able to absorb planned annual volume of work.Financial mechanisms and modalities for EE/RES investments are timely been developed within Environmental Funds.Existing end-user’s interest to implement and invest/co-finance EE/RES infrastructure projects.Energy professionals/ construction companies are able to perform high quality of work and assure timely infrastructure project implementation. |
| **Activities**  | Activity 1 - Technical assistance to Environmental Protection Funds, EE & RE capacity building and skills development (R1):1.1. Annual training on energy efficiency, energy management, EMIS, Laws, by-laws and EU directives for Fund staff provided by UNDP staff and/or consultants for niche expertise/knowledge1.2. Technical assistance throughout project implementation on energy management, EMIS, public lightining efficiency, usage of renewable energy sources, relevant EU directives, Laws and by-laws understanding, provided by UNDP staff and/or consultants for niche expertise/knowledge1.3. Skills development via on the job training/assistance provided by UNDP staff and/or consultants for niche expertise/knowledge on:* Understanding of energy conservation potential
* Analysis, evaluation and development of energy indicators and reports out of EMIS database
* Analysis, evaluation and development of prioritization list of public sector buildings and public lightning systems for energy audits
* Analysis, evaluation and development of technical, economic, financial, environmental and social parameters/factors (including co-financing from end-users) and development of ranking list of public sector buildings and public lightning systems for the implementation of EE infrastructure measures
* Monitoring and verification of energy and costs savings, emission reduction
* Tracking of indicators
* Decision making process cycle/methodology for EE infrastructure investments (identification, evaluation, decision, implementation, and monitoring/reporting)

Activity 2 - Capacity building for Nearly Zero Energy Buildings - NZEB and for understanding of RE in public sector building (R1)2.1 Training programme on NZEB policy and legislation, as well as on energy efficiency and integration of renewables in the exicting building stock for governments at all levels, municipalities, ESCOs, public facilities, building owners, public utilities, small and medium enterprises, producers, distributors, installers, engineers and professionals, provided by UNDP staff and/or consultants for niche expertise/knowledge2.2 Training programme on energy efficiency for representatives of public institutions2.3 Training programme on renewable energy for end users of public sector buildingsActivity 3 - Developing and strengthening the technical and economic capacity of municipalities, public facilities, public utilities, small and medium enterprises in BiH (R1)3.1. Development of ToR for development and delivery of training programme for development of technical and economic capacity on how to finance energy efficiency measures through the Revolving Fund3.2 Deliver training activities by contractor3.3 Evaluation of the professional development program/participantsActivity 4 - Energy intensity mapping application (R1)4.1 Development of ToR for development of energy intensity mapping applicationActivity 5 - Measurement and verification (M&V) module within EMIS (R1)5.1 Development of ToR for development of an M&V EMIS module or independent software tool that communicates with EMIS5.2 Applying two separate M&V mechanisms, for the public building sector and public lighting systemsActivity 6 - Cost-optimal analysis for public buildings (R1)6.1 Development of ToR for calculations on cost-optimality for public buildingsActivity 7 – Policy/definition of the Nearly Zero-Energy Public Buildings (R1)7.1 Drafting/updating regulation (Law on EE; by-laws) regarding definition of the Nearly Zero-Energy BuildingsActivity 8 - Drafting of at least 20 (for each entity in BiH) detailed energy audits for public sector buildings and public lightning systems (R1)8.1. Based on technical and economic and parameters, collected energy consumption and costs data, energy conservation potential and emission reduction emission potential from EMIS database (Activity 9), development of prioritization list of public sector buildings and public lightning systems for the conductance of detailed energy audits8.2. Development of ToR for tendering of detailed energy audits, in accordance with UNDP technical requirements and procedures (SOPs).8.3. Coordination and management of development of detailed energy audits and Quality assurance 8.4. Evaluation of technical, economic, financial, environmental and social parameters/factors (including co-financing from end-users) and development of ranking list of public sector buildings and public lightning systems for the implementation of EE infrastructure measures8.5. Decision on infrastructure investments Activity 9 - Implementation of Energy Management Information System into municipal public sector buildings in BiH (R2):9.1. Annual open Call for Proposals by Fund and UNDP for identification of public sector buildings/end-users interested in EE investments9.2. Submission of public sector buildings application to Fund/UNDP by filling out pre-defined survey of interest with basic building data and co-financing potential (sub-national project partners submission of list of public sector buildings in their jurisdiction)9.3. EMIS database update (by UNDP/Fund):* Opening an account (static input data) for the identified public facilities
* Collecting information on consumption and costs of energy and water in a period of the last 36 months, adjusted for entry into EMIS
* Technical support and assistance to contact persons in identified public facilities
* Creation of dynamic data for identified public buildings

9.4. Preparation of technical, economic and environmental parameters and energy conservation potential indicators within EMIS database (by UNDP/Fund for Activity 8)9.5. Management, administration, maintenance and further development of EMIS (by UNDP)9.6. Monitoring, error identification and correction activities on database (by UNDP/Fund)9.7. Monitoring and reporting of achieved energy and cost savings (kWh, KM), CO2 emission (t CO2) reduction and other specific indicators (by UNDP/Fund)Activity 10 - Implementation of Energy Management Information System in public lightning systems in BiH (R2)10.1. Annual open Call for Proposals by Fund and UNDP for identification of public lightning systems interested in EE investments10.2. Submission of application to Fund/UNDP by filling out pre-defined survey of interest with basic public lightning data and co-financing potential by municipalities10.3. EMIS database update (by UNDP/Fund):* Opening an account (static input data) for the identified public lightning systems
* Collecting information on consumption and costs of electric energy in a period of the last 36 months, adjusted for entry into EMIS
* Technical support and assistance to contact persons
* Creation of dynamic data for identified public lightning systems

10.4 Management, administration, maintenance and further development of EMIS (by UNDP)10.5 Monitoring and reporting of achieved energy and cost savings (kWh, KM), CO2 emission (t CO2) reduction and other specific indicators (by UNDP/Fund)Activity 11 - Training and capacity development for end-users on EMIS, energy efficiency and energy management by UNDP (R2):11.1. Development and delivery of EMIS, energy efficiency and energy management training module* Contact all identified end-users
* Organize training facilities throughout BiH, equipment (laptops) and travel arrangements
* Conduct training on EMIS

11.2. Technical support and assistance to trained persons throughout project implementationActivity 12 - Financial mechanism (ESCO Funding window) established at EFs and capitalized with EF’s own finance (R3)12.1 Define the process and criteria for the financial mechanism for Environmental Funds in BiH (ESCO funding window within EFs)12.2 Development of the ESCO business model processes, eligibility criteria for grants, monitoring and verification procedures for proving savings achieved and procurement methods with criteria for awarding grants and revolving loansActivity 13 - Implementation of infrastructural energy efficiency measures and renewable energy measures in BiH (R4):13.1. Selecting appropriate facilities for deep retrofits and set performance objectives. * Based on technical, economic and environmental parameters and energy conservation potential from conducted detailed energy audits, development of prioritization list of public sector buildings for the implementation of deep retrofit energy efficiency measures (focused on the EPBD Directive).
* The prioritization list of public sector buildings includes the best case scenario for deep savings in building energy consumption, annual energy and cost savings, investment costs, payback period and other relevant indicators.

13.2. Arranging co-financing by end users:* Development of Agreement on co-financing the implementation of infrastructural energy efficiency measures,
* Signature and entry into force of the Agreement on co-finance measures to increase energy efficiency of end-users.

13.3. Procurement process for development of design documentation* Development of Terms of Reference for the mechanical, electrical and structural part of the building
* Publication of a public tender / call for qualified bidders
* Evaluation of bids
* Contracting / signing

13.4. Design process * Development of design documentation (architectural, construction, mechanical, electro etc.): technical descriptions, drawings, bill of quantities…
* Issuance of required permits and elaborates
* Independent design document revision

13.5. Procurement process for selection of construction Contractor* Development of Terms of Reference
* Publication of a public tender / call for qualified bidders
* Evaluation of bids
* Contracting / signing

13.6. Construction process * Organizing the construction site
* Start up
* Construction supervision (Quality assurance will be ensured through an independent on-site quality control – supervision engineer, and additionally investor-UNDP supervision)
* Commissioning

13.7. Measurement and Verification (M&V). After the project has been designed, built, and commissioned, its energy consumption needs to be measured. This is achieved by installation of calorimeters for monitoring the energy consumption (heating, electricity, water) and its integration with EMIS system.Activity 14 - Raising public awareness / marketing campaign - Increase public awareness on human development as a result of clean/renewable energy and on energy efficiency (R5):14.1 Logo design and appliance of logo on all materials developed within the scope of the Project14.2 Development of the Communications Strategic Plan after research of targeted audience on energy efficiency benefits14.3 Organization of NZEB Directive specialized trainingsActivity 15 - Installation of hybrid photovoltaic and solar system (electricity and thermal heat generation) solutions to remote areas (not connected into the electricity grid) without electricity in BIH (R6)15.1 The families which will be supported by the project are selected on the basis of primary target area (global irradiation and solar electricity potential cross-checked with the area where most such returnee families live), vulnerability factor, number of family members (children, woman, man, elderly, etc.) by UNDP 15.2 Detailed assessment is developed in terms of identifying exact needs for installation of renewable energy kits15.3 Procurement process for selection of construction Contractor* Development of Terms of Reference
* Publication of a public tender / call for qualified bidders
* Evaluation of bids
* Contracting/signing

15.4 Construction process * Organizing the construction site
* Start up
* Construction supervision (Quality assurance will be ensured through an independent on-site quality control – supervision engineer, and additionally investor-UNDP supervision)
* Commissioning
 | ***Means:***Activity 1Technical assistance human resources and staffing (interlinked with all other activities)Engagement of one additional engineer and field officer (interlinked with all other activities)Staffing (Project Manager, Chief Technical Advisor for EE, Project Assistant, Project Associate x2, EMIS Technical officer) (interlinked with all other activities)Activity 2Development and delivery of training programme by UNDP/ContractorActivity 3Development and delivery of training programme by UNDP/ContractorActivity 4Development of application by UNDP/ContractorActivity 5Development of the software tool by UNDP/ContractorActivity 6Consultancy services/contractorsActivity 7Consultancy services/contractors Activity 8Development of energy audits by consultantActivity 9Activity 9 financing is provided by the Environmental Protection Fund of FBiH and RS, UNDP and is part of several other agreements. Activity 10Activity 10 financing is provided by the Environmental Protection Fund of FBiH and RS, UNDP and is part of several other agreements Activity 11Activity 11 financing is provided by the Environmental Protection Fund of FBiH and RS, UNDP and is part of several other agreements. Activity 12Consultancy services/contractors Activity 13Project design (by consultant)EE/RES infrastructure measure(by consultant)Supervision (by consultant)Activity 14EE Marketing campaign(by consultant)Designing and printing of promotional material (by consultant)Activity 15Consultancy services/contractors |  | Strong motivation by the Management and operational staff of the Fund to participate, engage and develop EE window/thematic area of work within Fund.Existing end-users interest for increasing EE within public sector buildings.Co-financing supply side (SWEDEN/Fund/UNDP) increased – co-financing volume for infrastructure projects is significantly higher.Law on EE is adopted/in process of adoption in both entities.Institutional willingness of sub-national level authorities (cantons, ministries) to establish energy monitoring and reporting mechanisms.Governments/authorities recognize EE improvements as a potential development generator. |

* 1. Theory of Change

The primarily goal of the **Green Economic Development 2nd phase project** is to contribute to the creation of a favorable environment for investing in EE and RES measures in BiH. This transformational change in the energy sector can only happen if the capacity and skills of the relevant energy institutions and professionals are strengthened in parallel with establishment of the system that enables financing for EE/RES infrastructure projects and access to energy for off grid households while generating green jobs and reducing CO2 emissions.

Ultimately, by supporting establishment of the sustainable and efficient energy system which will enable reinvestment into new infrastructural projects based on local priorities as well as generation of new employment, the Project will contribute to the achievement of the Outcome 5 (By 2019, legal and strategic frameworks are enhanced and operationalized to ensure sustainable management of natural, cultural and energy resources) and Outcome 6 (By 2019, better articulated and coordinated employment, education, and scientific policies and programmes enable greater access to productive employment and income opportunities) of the UNDP Country Programme Document 2015-2019.

The main Project’s inputs towards the set objectives are: technical assistance to Environmental Protection Funds, EE/RES/NZEB capacity building and skills development, developing and strengthening the technical and economic capacity of municipalities, public facilities, public utilities, small and medium enterprises in BiH, support to implementation of Energy Management Information systems, targeted analysis and audits, required policies, investments in infrastructural projects based on local priorities, cost-optimal analysis for public buildings, etc. These activities will be followed by monitoring and post-implementation quality assurance to ensure beneficiary satisfaction with the relevance and quality of the assistance provided by the Project.

This intervention rests on the assumption that the situation in BiH will remain politically and macro-economically stable, that the government pursues its policy and reform priorities as outlined in relevant strategies and the BiH Reform Agenda in the three priority sectors, that Environmental Funds have internal capacities and capabilities to manage and continue to operationalize energy efficiency thematic area within the Fund, Environmental Funds continue to finance EE/RES projects offering various financial mechanisms/modalities (performance-based grants, loans, ESCO Fund window), that energy monitoring and reporting mechanisms are replicated and applied as a harmonized system country-wide, the energy professionals/construction companies are able to perform high quality of work and assure timely infrastructure project implementation, and that the general public is aware that EE/RES is an economic-development driver.

Below is a visual snapshot of the Project’s theory of change.



Figure 24. Project’s theory of change

Within UNDP’s Green Economic Development 2nd phase project , a three-year project (2018 - 2020) will be launched with Environmental Protection Funds in BiH and supported by a number of cantonal governments in FBiH and ministries in RS as well as stale level MoFTER. The aim of the project is to:

* Create understanding within municipal authorities and various government levels in BiH on benefits of energy efficiency and renewable energy projects
* Institutionalize energy monitoring and reporting mechanisms / energy management on municipal level for public sector buildings and public lighting (and thus cover all authorities’ levels in BIH, i.e. GED project covered all entity and cantonal public sector buildings
* Develop and adopt self-sustainable financial mechanism within Environmental Protection Funds in BIH for green economic through energy efficiency and renewable energy project financing.
* Achieve budget cost savings through implementation of i) renewable energy projects in public sector buildings, and ii) energy efficiency projects in public lighting systems and reinvest savings into other infrastructure projects
* Generate employment of domestic workforce
* Increase public awareness and understanding of human development as a result of renewable energy and energy efficiency project benefits. Contribute to BiH’s EU accession (EPBD, EED and RES directives.

