

United Nations Development Programme

Country: Croatia

Project Activity Document

|  |   |
|--|---|
| <b>Project Title</b>   | EE Project -Technical assistance to local communities:<br>Bringing electricity to households in remote areas with the use of renewable energy sources   |
| <b>UNDP SP 2014-2017 Outcome</b>   | SP Outcome 1: Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded (Output 1.5)   |
| <b>Expected Output(s):</b><br><i>(Those that will result from the project)</i> | <ol style="list-style-type: none"><li>1. Installation of renewable energy sources (RES) systems for production of electrical energy in remote areas. Targeted number of households is 20.</li><li>2. Defining the set of basic rules and operational procedures, defining the ownership rights of installed RES equipment and potential conditions of use</li><li>3. Further evaluation and testing of methodology for economically best electrification solution</li><li>4. Further development of "Registry of un-electrified households and villages in Croatia" by definition of prioritization parameters.</li></ol> |
| <b>Executing Entity:</b>   | United Nations development Program in Croatia (UNDP Croatia)  |
| <b>Implementing Agencies:</b>  | UNDP Croatia, Environmental Protection and Energy Efficiency Fund (EPEEF), Other partners (Counties, Cities and Municipalities)   |

**Brief Description**

The overall objective of the project is bringing electricity to the households in remote areas of Croatia that are currently not connected on national electricity grid.

Secondary goal of the project is to gather needed information and to test the developed approaches and methodologies on real life cases in order to establish foundations for a systematic solution of economically efficient electrification of rural areas by renewable energy sources (RES).

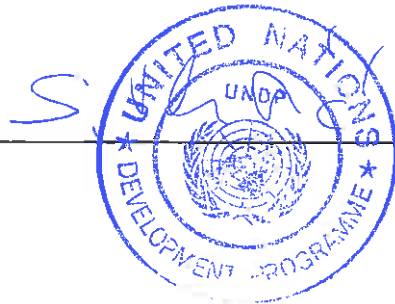
UNDP will work with local and national stakeholders on installation of rural RES electrification systems for 20 targeted households and development of practical system that can be replicated and applied in entire Croatia.

The project is designed to last 12 months, with the possibility of extension if the national institutions show interest in widening of the project approach on a wide scale national level.

|                                   |                              |
|-----------------------------------|------------------------------|
| Programme Period:                 | <u>2014 -2017</u>            |
| Key Result Area (Strategic Plan): | SP Outcome 1 /<br>Output 1.5 |
| Atlas Award ID:                   | <u>77195</u>                 |
| Start date:                       | <u>11.2014</u>               |
| End Date                          | <u>11.2015</u>               |
| PAC Meeting Date                  | <u>26.3.2014.</u>            |

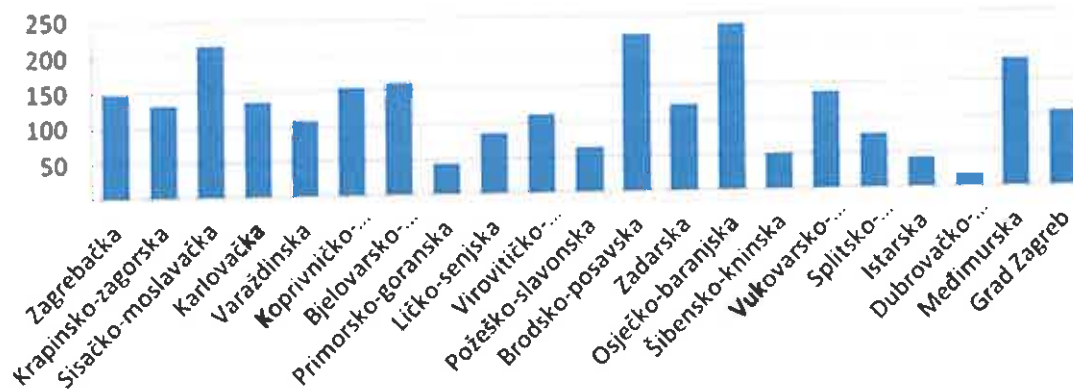
|                            |                             |
|----------------------------|-----------------------------|
| Total resources required   | <u>\$250,000</u>            |
| Total allocated resources: | <u>                    </u> |
| • Regular                  | <u>\$100,000</u>            |
| • Other:                   | <u>                    </u> |
| ○ Donor                    | <u>                    </u> |
| ○ Donor                    | <u>                    </u> |
| ○ Donor                    | <u>                    </u> |
| ○ Government               | <u>                    </u> |
| Unfunded budget:           | <u>\$150,000</u>            |
| In-kind Contributions      | <u>                    </u> |

For UNDP:



## I. SITUATION ANALYSIS

In Croatia there are still residences without access to electricity supply. The results of the latest census in Croatia that was done April 2011 show that there are still 2.573 inhabited residences without access to electricity. This is approximately 0,17% of total number of 1.496.558 residences in Croatia.<sup>1</sup> Picture 1 shows distribution of residences without electricity per counties.



**Picture 1 Inhabited residences without electricity, 2011. census**

Out of the total number of residences without electricity some analysis show that there are approximately 126 villages with more than 500 houses of mostly war returnees that are not connected to the public electricity grid. This is mainly due to destruction of infrastructure that happened during the war in 1990-ties. In these households only few inhabitants live throughout the entire year and Croatia's national electricity supplier Hrvatska elektroprivreda (HEP) estimates the costs for a grid connection of these villages to electricity grid of more than 50 million kn (6,7 million EUR).

These conditions are leading to the situation that due to low economical profitability of the development of required infrastructure it is not likely that the investments to connect these households to electricity supply grid will be done in near future, and this leaves them disconnected making it even harder for people to live and prosper there.

In order to address this issue, improve the quality of life in rural and isolated areas without access to public electricity grid and to test approach of rural electrification through renewable energy sources UNDP Croatia developed a model of **Rural Renewable energy sources electrification (RRES electrification)** including the methodology of comprehensive comparison of the RRES electrification with standalone systems and conventional connection to electric grid taking into consideration economic, environmental and social criteria. The developed model and methodology were tested and further improved through implementation of several pilot projects of RRES electrification. First pilot project was implemented in in 2011 in Ajderovac hamlet and subsequent two pilot projects in 2013 in Homoljac and Čavlovica.

The pilot projects were successfully implemented and were beneficial to local economy by creation of work on installation of systems for local companies, to the environment by bringing renewable electricity instead of classic fossil fuel produced electricity and to the people as finally the families were given access to electricity that eases their everyday life and work and secured electricity supply is very important prerequisite in rebuilding lives, especially for war returnee communities.

Bringing of the electricity to rural, remote and undeveloped areas is a first step that significantly eases reaching of minimal living conditions and improvements in quality of life for the people that live there. Also the access to electricity significantly increases social inclusion and possibilities for

<sup>1</sup>CROATIAN BUREAU OF STATISTICS (2013). Inhabited households without electrical energy per cities/municipalities, Data from 2011 census. (hrv. Nastanjeni stanovi bez električne energije po gradovima/općinama, Podaci iz popisa stanovništva 2011. godine.)

development of local entrepreneurship including sustainable agriculture or tourism. Application of RRES electrification model additionally has positive effects through lower carbon emissions and less dependence on imported fossil fuels.

The developed RRES electrification model is applicable in rural and isolated areas in Croatia or other neighboring countries and in many cases it is significantly cheaper and quicker approach to secure electricity for isolated homes.

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## II: STRATEGY

The proposed project is aligned with the following principles 1) promotion of employment and improvement of living conditions, particularly for vulnerable groups and less-favoured regions; 2) protection of the environment and fight against the causes and consequences of climate change; and 3) improvement of the competitiveness of less-developed regions by focusing on education and expanding human capacities. Aside this principles in project implementation the general principles of smart, sustainable and inclusive growth will be applied.

In all the project activities the efforts will be invested in active inclusion of local institutions and authorities in order to develop their capacity to conceive, refine, prioritize and implement similar projects on their own. This approach puts UNDP in a transitional, supporting role and our effort is aimed at building capacity of our partners and counterparts, rather than taking their place and working instead of them.

The overall objective of the project is bringing electricity to the households in remote areas of Croatia that are currently not connected on national electrical grid. The lack of connection to electricity grid is a complex issue, but from technical side the expensive extension of the grid to reach isolated and rural areas can be cost-effectively substituted by installation of off-grid renewable energy source systems.

As part of this project RRES electrification systems for 20 targeted households will be installed. The exact number of systems is dependent on the cost of individual unit and the amount of achieved co-financing from project partners, so by the project end it could be lower or higher than the 20 targeted households.

The primary focus will be on the household that used to have regular connection to the grid before the Homeland War and where there are tenants living most of the year or there is interest of the owners to return and live most of the year if electricity supply is secured. The realization of these systems will ease the life of families or return of families into their homes and will help to once more populate and even further develop rural areas in Croatia

Through project implementation the already developed and applied RRES electrification model will be further improved and applied on several additional households that will provide enough empirical data about the performance of the installed systems in different environments, and thus will provide necessary additional information that will serve as a framework for development of national program of systematic application of the RRES electrification model on national scale as an alternative to conventional connection to electricity grid for remote and isolated areas.

The data and insights derived from the project implementation will be used to identify potential issues and test the solutions that can be applied as part of National RRES program. The specific focus will be put on:

- Analysis of the roles, responsibilities and relations of main project stakeholders (local authorities, HEP ODS, HERA, etc.) and end users

- Analysis of issue of ownership rights of the installed RES systems (e.g. who will be the owner of the installed photovoltaic systems and thus who will be responsible for maintenance of the system)
- Related to ownership rights, the option of sale of produced energy to end users will be also analyzed.
- Fine tuning and additional improvement of UNDP developed methodology of comprehensive comparison of the RRES electrification with standalone systems and conventional connection to electric grid, including additional criteria.
- In cooperation with project stakeholders further update of the collected data in "Registry of un-electrified households and villages".

### III. RESULTS AND RESOURCES FRAMEWORK

**Intended Outcome as stated in the Country Programme Results and Resource Framework: N/A**

SP Outcome 1: Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded (Output 1.5. Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)).

**Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:**

**CO Indicator 1.5.2.A.1.1 Number of people with improved energy access as a result of UNDP-supported intervention**

**Baseline:**RRES systems installed for 3 households;

**Indicator:** Number of households with installed RRES system;

**Target:**RRES system installed for 20 targeted households

**CO Indicator 1.5.2.C.1.1 Energy generation from UNDP-supported renewable energy projects - Number of kilowatt hours (kWh) of solar energy generation from UNDP-supported renewable**

**Baseline:**12,000 kWh/year (one system 5kW and two systems 2.5 kWh, with assumed system efficiency is 1.3 kWh/MW installed power)

**Indicator:** Amount of energy generated.

**Target:** Targeted 46,800 kWh/year (20 systems assumed each 1.8 kWh, with assumed system efficiency is 1.3 kWh/MW installed power)

**Applicable Key Result Area: Energy and Environment**

**Partnership Strategy**

**Project title and ID (ATLAS Award ID): 33266, Project ID 77195**

| INTENDED OUTPUTS  | OUTPUT TARGETS FOR (YEARS)  | INDICATIVE ACTIVITIES  | RESPONSIBLE PARTIES   | INPUTS   |
|---|---|--|---|--|
| <b>Output 1:</b><br><b>Installation of renewable energy sources (RES) systems for production of electrical energy in remote areas. Targeted number of households is 20.</b> | <b>Targets (year 1)</b><br>- Installed RRES systems for 20 targeted households<br>- Targeted production of electricity of 46,800 kWh/year | Installation of RRES electrification systems for production of electrical energy in remote areas for 20 targeted households<br>Activities: <ul style="list-style-type: none"> <li>▪ Confirmation of the preliminary list of candidates</li> <li>▪ Preparation of evaluation criteria for establishment of the project priority list.</li> <li>▪ Dimensioning and defining of technical parameters of several typical RRES</li> </ul> | UNDP Croatia<br>Subcontracted companies<br>Other project partners | Total projected budget:<br>USD 250,000.00<br>UNDP financing<br>USD 100,000.00<br>Expected co-financing:<br>FZOEU, Counties, Local Authorities:<br>USD 150,000.00 |

|  |  |  |  |  |
|--|--|--|--|--|
| <p><u>Baseline:</u><br/>3 installed RRES systems<br/>Electricity production: 12,000 kWh/year</p> <p><u>Indicators:</u><br/>Number of installed RRES systems<br/>Amount of energy generated</p> |  | <p>electrification systems for different types of candidates (e.g. typical 2,5 kWp PV system suitable for typical families without specific economic activities on the site or larger systems for families with economic activities.).</p> <ul style="list-style-type: none"> <li>▪ Preparation and implementation of procurement process for equipment and installation services.</li> <li>▪ Clarification of the procedure of ownership transfer for the installed systems upon installation.</li> <li>▪ Monitoring of the installation of RRES electrification systems On-site.</li> <li>▪ Preparation of user friendly technical documentation and system usage instruction for end users</li> <li>▪ Implementation of detailed user education and practical instructions on how to handle installed equipment.</li> <li>▪ Establishment of monitoring system for installed equipment</li> <li>▪ Preparation of final reports and good example stories for installed systems after the installation is completed.</li> </ul> |  |  |
| <p><b>INTENDED OUTPUTS</b></p>   | <p><b>OUTPUT TARGETS FOR (YEARS)</b></p>   | <p><b>INDICATIVE ACTIVITIES</b></p>  | <p><b>RESPONSIBLE PARTIES</b></p>  | <p><b>INPUTS</b></p>                                     |
| <p><b>Output 2:</b><br/>Defining the set of basic rules and operational procedures, defining the ownership rights of installed RES equipment and potential conditions of use</p>               | <p>Targets (year 1)<br/>- Developed set of basic rules and operational procedures that will form a framework for National RRES electrification program</p> | <p>Development of a framework for National RRES electrification program</p> <p>Activities:</p> <ul style="list-style-type: none"> <li>▪ Analysis of the data and insights derived from the instalment of RRES systems</li> <li>▪ Identification of the best practice solution regarding management and ownership of the installed systems including service and maintenance of the installed equipment</li> <li>▪ Identification of all national and local</li> </ul>  | <p>UNDP Croatia<br/>Subcontracted companies<br/>Other project partners</p> | <p>Budget is shared for all 4 outputs (see Output 1)</p> |

|   |   |   |  |  |
|---|---|---|--|--|
| <p><u>Baseline:</u><br/>No defined rules and operational procedures</p> <p><u>Indicators:</u><br/>Number of developed rules and operational procedures</p>  |   | <p>institutions that can be potential partners in National RRES electrification program and analysis of their roles, responsibilities and relationships.</p> <ul style="list-style-type: none"> <li>▪ Examination of the issues that could hinder implementation of National RRES electrification program such as: <ul style="list-style-type: none"> <li>▪ The effect of unresolved property status on project implementation and standpoint of potential implementing partners on this issue.</li> <li>▪ The issue of legality of the buildings and standpoint of potential implementing partners on this issue.</li> </ul> </li> </ul> |  |  |
| <p><b>INTENDED OUTPUTS</b></p>  | <p><b>OUTPUT TARGETS FOR (YEARS)</b></p>  | <p><b>INDICATIVE ACTIVITIES</b></p>   | <p><b>RESPONSIBLE PARTIES</b></p>  | <p><b>INPUTS</b></p>                                     |
| <p><b>Output 3:</b><br/><b>Further evaluation and testing of methodology for economically best electrification solution</b></p> <p><u>Baseline:</u><br/>Developed methodology of comprehensive comparison of the RRES electrification with standalone systems</p> <p><u>Indicators:</u><br/>Implemented activities of finalisation and testing of developed methodology</p> | <p>Targets (year 1)</p> <ul style="list-style-type: none"> <li>- Developed methodology of comprehensive comparison of the RRES electrification with standalone systems and conventional connection to electric grid additionally evaluated, tested and finalised</li> </ul> | <p>Additional practical evaluation and testing of developed methodology of comprehensive comparison of the RRES electrification with standalone systems and conventional connection to electric grid.</p> <p>Activities:</p> <ul style="list-style-type: none"> <li>▪ Fine-tuning of the developed methodology by definition of additional technical requirements and criteria in order to facilitate decision making and prioritization of candidates and RRES electrification system dimensioning.</li> </ul>   | <p>UNDP Croatia<br/>Subcontracted companies<br/>Other project partners</p> | <p>Budget is shared for all 4 outputs (see Output 1)</p> |



| INTENDED OUTPUTS  | OUTPUT TARGETS FOR (YEARS)  | INDICATIVE ACTIVITIES   | RESPONSIBLE PARTIES  | INPUTS   |
|---|---|---|--|--|
| <p><b>Output 4:</b><br/> <b>Further development of "Registry of un-electrified households and villages in Croatia" by definition of prioritization parameters</b></p> <p><u>Baseline:</u><br/> Preliminary Registry established</p> <p><u>Indicators:</u><br/> Implemented activities of further development and update of the developed registry</p> | <p>Targets (year 1)</p> <ul style="list-style-type: none"> <li>- "Registry of un-electrified households and villages in Croatia" further developed and updated</li> </ul> | <p>Update of the "Registry of un-electrified households and villages in Croatia"</p> <p>Activities:</p> <ul style="list-style-type: none"> <li>▪ Gathering of the data on households without electricity during the field visits, through on site consultations with local authorities and other project implementation</li> <li>▪ Synchronizing all data on households without electricity from existing lists such as from SNV, SDF, HEP, UNHCR...</li> <li>▪ Input of the data in the registry.</li> </ul> | <p>UNDP Croatia<br/> Subcontracted companies<br/> Other project partners</p> | <p>Budget is shared for all 4 outputs (see Output 1)</p> |

#### IV. ANNUAL WORK PLAN

Year: 09. 2014 – 08.2015

| EXPECTED OUTPUTS<br><i>And baseline, indicators including annual targets</i>  | PLANNED ACTIVITIES<br><i>List activity results and associated actions</i>   | TIMEFRAME |    |    |    | RESPONSIBLE PARTY | PLANNED BUDGET |                              |
|---|---|-----------|----|----|----|-------------------|----------------|------------------------------|
|   |   | Q1        | Q2 | Q3 | Q4 |                   | Funding Source | Budget Description<br>Amount |
| <b>Output 1</b><br><u>Baseline:</u><br>3 installed RRES systems<br>Electricity production: 12,000 kWh/year<br><u>Indicators:</u><br>Number of installed RRES systems<br>Amount of energy generated<br><u>Targets:</u><br>Installed RRES systems for 20 targeted households<br>Targeted production of electricity of 46,800 kWh/year<br><u>Related CP outcome:</u><br>SP Outcome 1 | Installation of RRES electrification systems<br>- Confirmation of the list of candidates<br>- Preparation of evaluation criteria<br>- Establishment of the project priority list.<br>- Defining of the typical RRES electrification systems<br>- Preparation of procurement procedure<br>- Implementation of the procurement procedure<br>- Clarification of the procedure of ownership transfer<br>- Monitoring of the installation of RRES electrification systems<br>- Preparation of user friendly technical documentation<br>- Implementation of detailed user education<br>- Establishment of monitoring system<br>- Preparation of final reports and good example stories. | X         | X  | X  | X  | UNDP Croatia      |                |                              |
|   |   | X         | X  | X  | X  |                   |                |                              |
|   |   | X         | X  | X  | X  |                   |                |                              |
|   |   | X         | X  | X  | X  |                   |                |                              |
|   |   | X         | X  | X  | X  |                   |                |                              |
| <b>Output 2</b><br><u>Baseline:</u><br>No defined rules and operational procedures<br><u>Indicators:</u><br>Number of developed rules and operational procedures  | National RRES electrification program framework<br>- Analysis of the data and insights derived from the instalment of RRES systems<br>- Identification of the best practice solution: management, ownership, service and maintenance<br>- Identification of potential national partners for RRES  | X         | X  | X  | X  | UNDP Croatia      |                |                              |
|   |   | X         | X  | X  | X  |                   |                |                              |

| EXPECTED OUTPUTS<br>And baseline, indicators including annual targets  | PLANNED ACTIVITIES<br><i>List activity results and associated actions</i>   | TIMEFRAME |    |    |    | RESPONSIBLE PARTY | PLANNED BUDGET |        |
|--|---|-----------|----|----|----|-------------------|----------------|--------|
|  |   | Q1        | Q2 | Q3 | Q4 |                   | Funding Source | Amount |
| <u>Targets:</u><br>Developed set of basic rules and operational procedures that will form a framework for National RRES electrification program<br><u>Related CP outcome:</u><br>SP Outcome 1  | electrification program<br>-Analysis of their roles, responsibilities and relationships.<br>- Examination an analysis of the issues that could hinder implementation of National RRES electrification program such (unresolved property status, legality of the buildings, etc)<br>- Preparation of the National RRES electrification program framework | X         | X  | X  | X  |                   |                |        |
| Output 3<br><u>Baseline:</u><br>Developed methodology of comprehensive comparison of the RRES electrification with standalone systems<br><u>Indicators:</u><br>Implemented finalisation and testing of developed methodology<br><u>Targets:</u><br>Developed methodology of comprehensive comparison of the RRES electrification with standalone systems and conventional connection to electric grid additionally evaluated, tested and finalised<br><u>Related CP outcome:</u><br>SP Outcome 1 | RRES electrification methodology upgrade<br>- Definition of additional technical requirements and criteria in order to facilitate decision making and prioritization of candidates and RRES electrification system dimensioning.<br>- Fine-tuning of the developed methodology  | X         | X  | X  | X  |                   |                |        |
|  |   |           |    |    |    | UNDP Croatia      |                |        |

| EXPECTED OUTPUTS<br>And baseline, indicators including annual targets  | PLANNED ACTIVITIES<br>List activity results and associated actions  | TIMEFRAME |    |    |    | RESPONSIBLE PARTY | PLANNED BUDGET |                              |
|--|---|-----------|----|----|----|-------------------|----------------|------------------------------|
|  |   | Q1        | Q2 | Q3 | Q4 |                   | Funding Source | Budget Description<br>Amount |
| Output 4<br><u>Baseline:</u><br>Preliminary Registry established<br><u>Indicators:</u><br>Implemented activities of further development and update of the developed registry<br><u>Targets:</u><br>"Registry of un-electrified households and villages in Croatia" further developed and updated<br><u>Related CP outcome:</u><br>SP Outcome 1 | Registry update<br>- Gathering of the data during the field visits, through on site consultations with local authorities and other project implementation<br>- Update of the registry | X         | X  | X  | X  | UNDP Croatia      |                |                              |
|  |   | X         | X  |    |    |                   |                |                              |
| <b>TOTAL</b>   |   |           |    |    |    |                   |                |                              |

## V. MANAGEMENT ARRANGEMENTS

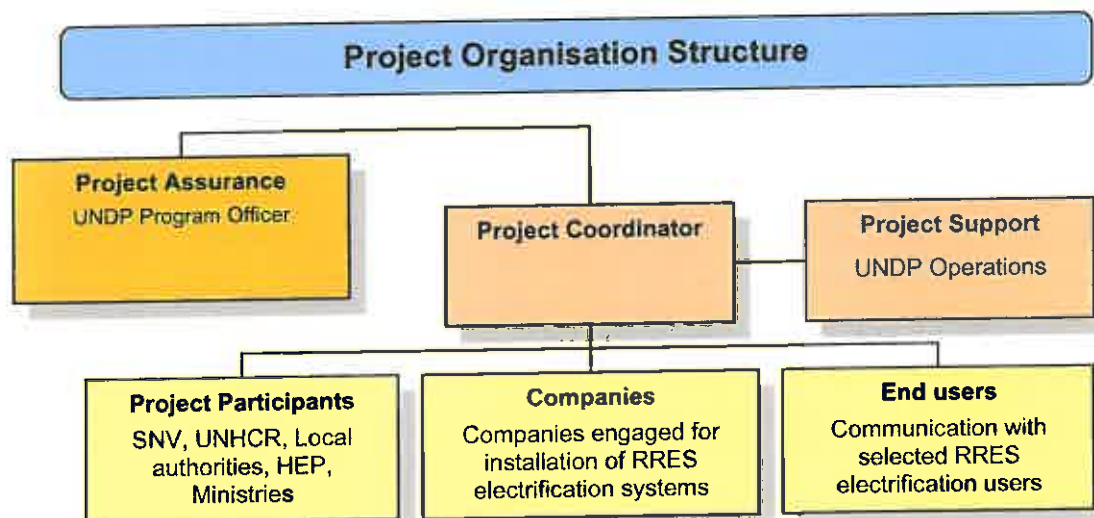
The Project Coordinator (PC) will be engaged by UNDP Croatia and will be responsible for management and implementation of all project activities. The project assurance will be done through oversight and supervision of PC by UNDP programme officer. Needed administrative assistance for project implementation will be provided by UNDP Operations unit. Actual on site project implementation and provision of eventual specific expert services will be provided through engagement of specific companies or individual experts.

The project implementation will be fully coordinated with other project participants (implementation partners) and End users.

Aside to the budget funds that will be directly invested into project implementation by UNDP, the PC will have the obligation of defining the most effective co-financing options in order to enable participation of Croatian Environmental protection and Energy Efficiency Fund, that has expressed firm interest in direct co-financing of project implementation.

The list of potential candidates for project implementation will be generated in close cooperation with project participants, which will provide their databases and information regarding existing needs.

The diagram below shows basic Project organisational structure.



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## VI. MONITORING FRAMEWORK AND EVALUATION

In accordance with the programming policies and procedures outlined in the UNDP User Guide, the project will be monitored through the following:

### Within the project implementation cycle:

- On a quarterly basis, a quality assessment of the project progress towards the completion of the key results will be performed. The short project progress and status report will be prepared
- Project coordinator will keep and regularly update a Project Issue Log and a project Lesson-learned log to facilitate tracking and resolution of potential problems or requests for change and to use the data in preparation of project lessons learned report.

### Annually

- **Final project report:** The final project report shall be prepared by the Project Coordinator and shared with UNDP Program Officer. The final report shall encompass individual success stories on every installed RRES electrification system, and standard project overview covering the whole year and the summary of overall achieved results compared to pre-defined targets at the output level.

## Quality Management for Project Activity Results

| OUTPUT 1: Installation of renewable energy sources (RES) systems for production of electrical energy in remote areas. Targeted number of households is 20. |  |   |
|--|--|---|
| <b>Activity Result 1 (Atlas Activity ID)</b>   | <i>Installation of RRES electrification systems</i>  | Start Date: 11.2014<br>End Date: 11.2015  |
| <b>Purpose</b>   | <i>Installation of RRES electrification systems for production of electrical energy in remote areas for 20 targeted households</i>   |   |
| <b>Description</b>   | <p><i>Activity result 1 will be achieved by implementation of following actions:</i></p> <ul style="list-style-type: none"> <li><i>a) Confirmation of the preliminary list of candidates</i></li> <li><i>b) Preparation of evaluation criteria</i></li> <li><i>c) Establishment of the project priority list.</i></li> <li><i>d) Dimensioning and defining of technical parameters of several typical RRES electrification systems for different types of candidates (e.g. typical 2,5 kWp PV system suitable for typical families without specific economic activities on the site or larger systems for families with economic activities.).</i></li> <li><i>e) Preparation and implementation of procurement process for equipment and installation services.</i></li> <li><i>f) Clarification of the procedure of ownership transfer for the installed systems upon installation.</i></li> <li><i>g) Monitoring of the installation of RRES electrification systems On-site.</i></li> <li><i>h) Preparation of user friendly technical documentation and system usage instruction for end users</i></li> <li><i>i) Implementation of detailed user education and practical instructions on how to handle installed equipment.</i></li> <li><i>j) Establishment of monitoring system for installed equipment</i></li> <li><i>k) Preparation of final reports and good example stories for installed systems after the installation is completed.</i></li> </ul> |   |
| <b>Quality Criteria</b><br><i>how/with what indicators the quality of the activity result will be measured?</i>  | <b>Quality Method</b><br><i>Means of verification. what method will be used to determine if quality criteria has been met?</i>   | <b>Date of Assessment</b><br><i>When will the assessment of quality be performed?</i>   |
| Objective list of potential candidates   | The identified list of candidates should be prioritised using developed evaluation criteria using into consideration different elements, such as number and age of tenants, do they have any children is there any economic activity on site etc.  | (Q1) Prior the final identification of candidates and preparation of procurement documentation  |
| Proper dimensioning of RRES electrification system   | Analysis of proposed typical RRES electrification systems with clear explanation of the decision making process for system dimensioning and conclusion regarding typical sizes.  | (Q1) Prior the preparation of procurement documentation   |
| Proper installation of RRES electrification systems  | Control the process of the installation of the systems and secure the proper installation.   | (Q2; Q3) Control of the proper installation will be done in parallel of installation and final review report will be prepared once all installations are complete |
| Proper education of end users  | Interviews with the end users do they feel comfortable and know how to operate the RRES electrification system   | (Q3; Q4) The interviews with the end users will be done two to three weeks after they received the training and education   |
| Established monitoring system  | Test is there clear line of communication and is it possible to get all the needed data regarding the installed systems.   | (Q3; Q4) Monitoring procedures and established system can be tested once the installation of system is done   |

| <b>OUTPUT 2:Defining the set of basic rules and operational procedures, defining the ownership rights of installed RES equipment and potential conditions of use</b> |  |   |
|--|--|---|
| <b>Activity Result 2 (Atlas Activity ID)</b>   | <i>Developed set of basic rules and operational procedures that will form a National RRES electrification program framework</i>  | Start Date: 11.2014<br>End Date: 11.2015  |
| <b>Purpose</b>   | <i>Development of a framework for National RRES electrification program</i>  |   |
| <b>Description</b>   | <ul style="list-style-type: none"> <li><i>a) Analysis of the data and insights derived from the instalment of RRES systems</i></li> <li><i>b) Identification of the best practice solution regarding management and ownership of the installed systems including service and maintenance of the installed equipment</i></li> <li><i>c) Identification of all national and local institutions that can be potential partners in National RRES electrification program</i></li> <li><i>d) Analysis of their roles, responsibilities and relationships.</i></li> <li><i>e) Examination of the issues that could hinder implementation of National RRES electrification program such as:</i><br/> <i>The effect of unresolved property status on project implementation and standpoint of potential implementing partners on this issue.</i><br/> <i>The issue of legality of the buildings and standpoint of potential implementing partners on this issue.</i> </li> </ul> |   |
| <b>Quality Criteria</b><br><i>how/with what indicators the quality of the activity result will be measured?</i>  | <b>Quality Method</b><br><i>Means of verification. what method will be used to determine if quality criteria has been met?</i>   | <b>Date of Assessment</b><br><i>When will the assessment of quality be performed?</i>   |
| Developed and tested the suitable management, ownership, service and maintenance solutions for installed systems.  | Testing of the developed solutions with all potential institutions and directly with the end users.  | (Q3; Q4) The developed solution should be tested and at the end implemented for all installed solution of transfer                    |
| Status and potential solution for identified issues that could hinder implementation of National RRES electrification program.                                       | The solution for the potential issues, or clear positive standpoint agreed with potential partner institutions.  | (Q3; Q4) The potential issues have to be clarified prior the finalisation of the framework for National RRES electrification program. |



| <b>OUTPUT 3: Further evaluation and testing of methodology for economically best electrification solution</b>   |  |  |
|---|--|--|
| <b>Activity Result 3 (Atlas Activity ID)</b>  | <i>RRES electrification methodology upgrade</i>  | Start Date: 11.2014<br>End Date: 11.2015   |
| <b>Purpose</b>  | <i>Additional practical evaluation and testing of developed methodology of comprehensive comparison of the RRES electrification with standalone systems and conventional connection to electric grid.</i>                                |  |
| <b>Description</b>  | a) <i>Fine-tuning of the developed methodology by definition of additional technical requirements and criteria in order to facilitate decision making and prioritization of candidates and RRES electrification system dimensioning.</i> |  |
| <b>Quality Criteria</b><br><i>how/with what indicators the quality of the activity result will be measured?</i> | <b>Quality Method</b><br><i>Means of verification. what method will be used to determine if quality criteria has been met?</i>   | <b>Date of Assessment</b><br><i>When will the assessment of quality be performed?</i>  |
| Delivery of improved methodology  | Testing of the additional improvements of the methodology on the real cases.   | (Q1; Q2) The upgrade and testing of the methodology should be prepared in parallel with identification of candidates for RRES electrification. |

| <b>OUTPUT 4: Further development of "Registry of un-electrified households and villages in Croatia" by definition of prioritization parameters</b> |  |   |
|--|--|---|
| <b>Activity Result 4 (Atlas Activity ID)</b>   | <i>"Registry of un-electrified households and villages in Croatia" further developed and updated</i>   | Start Date: 11.2014<br>End Date: 11.2015  |
| <b>Purpose</b>   | <i>Update of the "Registry of un-electrified households and villages in Croatia"</i>   |   |
| <b>Description</b>   | a) <i>Gathering of the data on households without electricity during the field visits, through on site consultations with local authorities and other project implementation</i><br>b) <i>Input of the data in the registry.</i> |   |
| <b>Quality Criteria</b><br><i>how/with what indicators the quality of the activity result will be measured?</i>                                    | <b>Quality Method</b><br><i>Means of verification. what method will be used to determine if quality criteria has been met?</i>   | <b>Date of Assessment</b><br><i>When will the assessment of quality be performed?</i>         |
| Wholeness of the registry  | Perform the partial test does the registry covers all the potential candidates.  | (Q4) The test of the wholeness of the registry will be performed near the end of the project. |

