



**THE REPUBLIC OF AZERBAIJAN**

**THE MINISTRY OF ECOLOGY AND NATURAL RESOURCES**

**Report on project ideas  
FOR MITIGATION TECHNOLOGIES**

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**Supported by**



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## Chapter 1: Alternative energy sources sub-sector

### 1.1. Brief summary of project ideas

Current initiatives are being taken in the alternative energy sources sub-sector, by different stakeholders, during the preparation of project proposals related to prioritized technologies. After the stakeholder consultation, two project ideas under the alternative energy sources sub-sector were proposed:

- 1) Pilot project promoting use of solar energy for hot water at municipal and community level at floodplain and lowland areas of Azerbaijan
- 2) Pilot project promoting application of biogas technology in remote rural communities of Azerbaijan

### 1.2. Specific project ideas

#### 1) Pilot project promoting use of solar energy for hot water at municipal and community level at floodplain and lowland areas of Azerbaijan

##### Background

There is enough potential solar energy in Azerbaijan (the number of annual sunshine hours is 2400-3000), however due to lack of knowledge and capacity, local authorities, private sector, NGOs and local communities do not appropriate funds or resources for this renewable energy. Passive solar energy for hot water has been identified as one of the priority mitigation technologies by the TNA/TAP process, as it is in line with development priorities and technological advancement needs of the country.

The main barriers to deployment and dissemination of the technology are lack of awareness and adequate skills/capacity of local authorities, private sector and communities on advantages and use of the technology. Another barrier is weak access to acceptable financial means to purchase the technology.

The proposed pilot project envisages the measures to effectively address the information, technical knowledge and capacity building barriers, and create linkages with financial institutions providing loans at suitable terms acceptable for local users.

The project has great value as it addresses capacity/building, technical and financial barriers of technology deployment. Implementation of project activities will result in increase of awareness of local communities on economic and environmental advantages of technology deployment.

The project has a great potential for being replicated in other regions of the country, as its effective practice will be demonstrated by organizing study tours to the project area.

**Project goal:** The main project goal is to promote deployment of solar energy for hot water in local communities by increasing level of awareness, improving knowledge and skills of community residents, local authorities, private sectors, NGOs and other relevant stakeholders, in order to overcome capacity building/information barriers. Another goal is to create access to information on financial opportunities at current market and improve linkages of local communities with financial institutions, such as credit unions, banks, other relevant state and international funds.

##### Project objectives:

- Increase awareness level of local communities, local authorities, private sector and other relevant stakeholders on advantages of solar energy;
- Increase technical capacity of relevant stakeholders involved in technology application;

- Promote application of solar energy at community level through practical demonstration of its advantages;
- Increase access to financing (credits, loans, grants) at acceptable terms for technology deployment.

**Project activities:**

- Launch workshops for presentation of project goals and objectives;
- Organize round-table discussions with relevant stakeholders;
- Information campaigns and outreach activities (including websites and other internet sources) to increase awareness level;
- Capacity building trainings for representatives of local authorities, private sector, NGOs, other relevant stakeholders and community residents;
- Specific trainings to increase technical capacity of relevant stakeholders (technical service providers) to improve quality of provided services;
- Implement pilot projects at community level, including installation of passive solar energy equipment at individual households, local authority buildings, private business buildings and so on;
- Organize study tours with participation of representatives of surrounding communities in order to demonstrate effective project results and enable replication of project activities;
- Improve market linkages of target communities with relevant market players, including financial institutions, in order to create enabling framework for further application of passive solar energy by local communities;
- Organize national conference in order to present project achievements to wider group of stakeholders.

**Project outputs:**

- Installation of solar panels at 500 households in two local communities;
- Reduction of approximately 189 thousand tons of GHG emission;
- Six round-table discussions with participation of representatives of relevant ministries, agencies, institutions;
- At least 1000 participants, including representatives of local authorities, private sector, local community residents, NGOs, with improved knowledge and capacity of economic and environmental advantages of technology deployment;
- Four study tours with at least 100 participants in order to share effective practices;
- At least 20 local residents to receive affordable loans from financial institutions to deploy technology;
- At least five financial institutions and four solar panel producers/importers involved in project;
- Two national conferences organized to disseminate project achievements at national level.

**Project beneficiaries:** Project beneficiaries are local communities situated in floodplain and lowland areas of Azerbaijan, as well as local authorities, private sector, NGOs and other relevant stakeholders. The current project will cover two pilot communities (totaling 500 households) and will have 500 direct project beneficiaries. It is intended to enhance replication of applied best practices in territories of the country with solar energy potential.

As a result of the project, total reduction in GHG emission will be 189 thousand tons per year, taking into account that each household will use 2 kW/hour less energy from general electric power per day-- on average 300 days per year.

**Relevant stakeholders:**

- State Company on Alternative and Renewable Energy Sources will coordinate project activities as the main institution in the field of alternative and renewable energy in the country;
- Ministry of Economic Development will support implementation of the financial component by creating access to long-term and low-interest loans through different state funds;
- Local authorities will play the role of facilitator during implementation of project activities in target local communities and support practical actions;
- Private sector (financial institutions, producers/importers of solar panels) will be involved as market players actively participating in project implementation;
- NGOs will be involved in the project implementation cycle and will be responsible for capacity building/awareness-raising activities and dissemination of best practices to other surrounding communities.

**Project duration:** 3.5 years

**Project budget:** 3,250,000 USD

**Project sustainability:** Information campaigns, capacity building activities and study tours for demonstration of effective practices are designed to achieve project sustainability. Practical demonstration of advantages of applied technology will lead to replication of technology use by other communities. The project will contribute to the country's sustainable development priorities (economic, environmental and social), as it will result in sustainable energy supply to local communities, improved living conditions, creation of new jobs and improved ecological conditions (reduction in GHG emissions).

**Project deliverables:** At the community level, the pilot project will lead to significant results and will enable the demonstration of best practices to other local communities.

**Project scope and possible implementation:** The project will cover two local communities (totaling 500 households) situated in arid regions with high solar energy potential. All relevant stakeholders (state institutions, agencies, private sector, local authorities, NGOs, local communities) are interested in project implementation. In the past there were similar project initiatives, however they were at the individual level and lacked capacity building or financial components.

**Risks:** The main risk of project implementation is low interest of local communities in technology deployment. This risk will be mitigated through effective awareness-raising activities to be organized during the project implementation period.

**Project monitoring and evaluation:** The project will be monitored by a Project Steering Committee to be formed under the current project. Representatives of different state institutions, agencies, NGOs, private sector and local authorities will be included in the Project Steering Committee. Project results will be assessed by external evaluators, as well as by relevant state institutions (Ministry of Economic Development, State Company on Alternative and Renewable Energy Sources) responsible for project coordination.

## 2) Pilot project promoting application of biogas technology in remote rural communities of Azerbaijan

### Background

Biogas technology helps improve the livelihoods of poor rural people and contributes to the reduction of greenhouse gas emissions. It helps improve sanitation conditions as cattle dung is no longer burned to generate power but is channeled into biogas digesters.

Biogas for cooking and electricity is mainly suitable for application in rural areas--mostly remote areas with no gas supply, dependent on wood resources. It will lead to less harm to forest resources and reduce subsequent GHG emissions.

Local populations living in remote rural communities mainly deal with cattle-breeding activities. By using small biogas digesters and specific technology, gas for cooking and heating purposes could be produced at rural households. Consequently, this technology has been identified as one of the priority mitigation technologies by TNA/TAP process, as it is in line with development priorities and technological advancement needs of the country.

The main barriers to deployment and dissemination of the technology are lack of awareness and adequate skills/capacity of local authorities, private sector and communities on advantages and use of the technology. Another barrier is weak access to acceptable financial means to purchase the technology.

The proposed pilot project envisages the measures to effectively address the information, technical knowledge and capacity building barriers, and create linkages with financial institutions providing loans at suitable terms acceptable for local users. Current market prices are not affordable for most community residents. By increasing access to suitable financial means, such as long-term, low interest credits, use of biogas technology by local residents could be enhanced. Moreover, by supporting local production market prices may decrease, enabling local residents to afford purchasing the technology.

The project has a great potential for being replicated in other regions of the country, as its effective practice will be demonstrated by organizing study tours to the project area.

**Project goal:** The main project goal is to promote application of biogas technology in rural communities by increasing level of awareness, improving knowledge and skills of community residents, local authorities, private sectors, NGOs and other relevant stakeholders. Another goal of the project is to promote local production of biogas technology.

### Project objectives:

The project will consist of three main components:

#### ***Component I: Promote application of biogas technology at community level***

- Increase awareness level of local communities, local authorities, private sector and other relevant stakeholders on advantages of biogas technology;
- Promote application of biogas technology at community level through practical demonstration of its advantages.

#### ***Component II: Promote application of biogas technology at large livestock farms***

- Increase awareness level and demonstrate practical advantages of biogas technology.

#### ***Component III: Support for private sector to promote local production of technology***

- Support private sector initiatives for launching local production of biogas technology;
- Increase technical capacity of relevant stakeholders involved in technology application.

### Project activities:

- Launch workshops for presentation of project goals and objectives;
- Organize round-table discussions with relevant stakeholders;
- Information campaigns and outreach activities (including websites and other internet sources) to increase awareness level to overcome social barrier;
- Capacity building trainings for representatives of local authorities, private sector, NGOs, other relevant stakeholders and community residents;
- Specific trainings to increase technical capacity of relevant stakeholders (technical service providers) to improve quality of provided services;
- Implement pilot projects at community level, including installation of biogas technology equipment at individual households (300 households in five rural communities);
- Implement pilot projects at large livestock farms (two farms);
- Organize study tours with participation of representatives of surrounding communities in order to demonstrate effective project results and enable replication of project activities;
- Improve market linkages of target communities with relevant market players, including financial institutions, in order to create enabling framework for further application of biogas technology by local communities;
- Intensive collaboration with private sector and supporting initiative to launch local production of biogas technology equipments (at least one private company);
- Organize national conference in order to present project achievements to wider group of stakeholders.

**Project outputs:**

- Installation of biogas devices at 300 households in five rural communities;
- Reduction of approximately 113 thousand tons of GHG emission, and increase of CO<sub>2</sub> absorption by forests;
- Six round-table discussions with participation of representatives of relevant ministries, agencies, institutions;
- At least 1000 participants, including representatives of local authorities, private sector, local community residents, NGOs, with improved knowledge and capacity of economic and environmental advantages of technology deployment;
- Five study tours with at least 125 participants in order to share effective practices;
- At least 30 local residents to receive affordable loans from financial institutions to deploy technology;
- At least five financial institutions and two biogas technology producers/importers involved in project;
- Two national conferences organized to disseminate project achievements at national level.

**Project beneficiaries:** Project beneficiaries are local communities situated in mountainous areas of Azerbaijan, as well as local authorities, private sector, NGOs and other relevant stakeholders. The current project will cover five pilot communities (totaling 300 households), two large livestock farms and one private sector representative, and will have 320 direct project beneficiaries. It is intended to enhance replication of applied best practices in territories of the country, mainly focusing on remote mountainous regions.

As a result of the project, total reduction in GHG emission will be 113 thousand tons per year, taking into account that each household will use 2 kW/hour less energy from general electric power per day--300 days on average per year. Additionally, local communities will apply less pressure to forest resources, which will lead to increase of CO<sub>2</sub> absorption.

**Relevant stakeholders:** Ministry of Ecology and Natural Resources, Ministry of Industry and Energy, State Company on Alternative and Renewable Energy Sources, local authorities, private sector, NGOs.

- State Company on Alternative and Renewable Energy Sources will coordinate project activities as the main institution in the field of alternative and renewable energy in the country;
- Ministry of Economic Development will support implementation of the financial component by creating access to long-term and low-interest loans through different state funds;
- Ministry of Ecology and Natural Resources will support project implementation by raising awareness of ecological importance of technology deployment;
- Local authorities will play the role of facilitator during implementation of project activities in target local communities and support practical actions;
- Private sector (financial institutions, producers/importers of biogas devices) will be involved as market players actively participating in project implementation;
- NGOs will be involved in the project implementation cycle and will be responsible for capacity building/awareness-raising activities and dissemination of best practices to other surrounding communities.

**Project duration:** 3 years

**Project budget:** Total budget: 2,200,000 USD

Component I: Promote application of biogas technology at community level – 1,500,000 USD

Component II: Promote application of biogas technology at large livestock farms – 100,000 USD

Component III: Support for private sector to promote local production of technology – 600,000 USD

**Project sustainability:** Information campaigns, capacity building activities and study tours for demonstration of effective practices are designed to achieve project sustainability. Practical demonstration of advantages of applied technology will lead to replication of technology use by other communities. Supporting local production of the technology will improve access of local residents to technology deployment.

The project will contribute to the country's sustainable development priorities (economic, environmental and social), as it will result in sustainable energy supply to local communities, improved living conditions, creation of new jobs and improved ecological conditions (decreased pressure on forest resources, reduction in GHG emissions).

**Project deliverables:** At the community level, the pilot project will lead to significant results and will enable the demonstration of best practices to other local communities. Launching local production of the technology will lead to project sustainability and replication of effective practices.

**Project scope and possible implementation:** The project will cover five rural communities (totaling 500 households) situated in remote regions with less developed infrastructure (roads, gas/energy supply). All relevant stakeholders (state institutions, agencies, private sector, local authorities, NGOs, local communities) are interested in project implementation. In the past there were similar project initiatives, however they were at the individual level and lacked capacity building or financial components, and were therefore unsustainable.

**Risks:** The main risk of project implementation is low interest of local communities in technology deployment. This risk will be mitigated through effective awareness-raising activities to be organized during the project implementation period.

**Project monitoring and evaluation:** The project will be monitored by a Project Steering Committee to be formed under the current project. Representatives of different state institutions, agencies, NGOs, private sector and local authorities will be included in the Project Steering Committee. Project

results will be assessed by external evaluators, as well as by relevant state institutions (Ministry of Economic Development, Ministry of Ecology and Natural Resource, State Company on Alternative and Renewable Energy Sources) responsible for project coordination.

## Chapter 2: Commercial and residential sub-sector

### 2.1. Brief summary of project ideas

Current initiatives are being taken in the commercial and residential sub-sector, by different stakeholders, during the preparation of project proposals related to prioritized technologies. After the stakeholder consultation, one project idea under the commercial and residential sub-sector was proposed: Demonstrate effective practices of application of efficient stoves in remote rural communities of Azerbaijan.

### 2.2. Specific project ideas

#### 1) Demonstrate effective practices of application of efficient stoves in remote rural communities of Azerbaijan

##### Background

There are some remote rural communities in Azerbaijan that are still not supplied with gas resources. The only source for heating in these communities is wood and manure. Being mainly dependent on wood, local residents are forced to use forest resources. Currently used stoves are inefficient. Application of efficient stoves technology will lead to less harm to forest resources and reduce subsequent GHG emissions. Moreover, local farmers will use less electricity, thereby paying less.

The main barriers to deployment and dissemination of the technology are lack of awareness and adequate skills/capacity of local authorities, private sector and communities on advantages and use of the technology. Another barrier is weak access to acceptable financial means to start-up production of the technology.

The proposed pilot project envisages the measures to effectively address the information, technical knowledge, social and capacity building barriers, and create linkages with financial institutions providing loans at suitable terms acceptable for local users. By supporting local production market prices may decrease, enabling local residents to afford purchasing the technology.

The project has a great potential for being replicated in other regions of the country, as its effective practice will be demonstrated by organizing study tours to the project area.

**Project goal:** The main project goal is to promote application of efficient stoves in rural communities by increasing level of awareness, improving knowledge and skills of community residents, local authorities, private sectors, NGOs and other relevant stakeholders. Another goal of the project is to support local production of efficient stoves.

##### Project objectives:

- Increase awareness level of local communities, local authorities, private sector and other relevant stakeholders on advantages of the technology;
- Promote application of the technology at community level through practical demonstration of its advantages;
- Support private sector initiatives to launch local production of efficient stoves;
- Increase technical capacity of relevant stakeholders involved in technology application.

##### Project activities:

- Launch workshops for presentation of project goals and objectives;
- Organize round-table discussions with relevant stakeholders;

- Information campaigns to increase awareness level and overcome social barriers;
- Capacity building trainings for representatives of local authorities, private sector, NGOs, other relevant stakeholders and community residents;
- Specific trainings to increase technical capacity of local producers to improve quality of produced stoves;
- Implement pilot projects at community level;
- Organize study tours with participation of representatives of surrounding communities in order to demonstrate effective project results and enable replication of project activities;
- Improve market linkages of target communities with relevant market players, including financial institutions, in order to create enabling framework for further application of the technology by local communities;
- Intensive collaboration with private sector and supporting initiative to launch local production.

**Project outputs:**

- Installation of efficient stoves at 200 households in two rural communities;
- Reduction of approximately 37.8 thousand tons of GHG emission, and increase of CO<sub>2</sub> absorption by forests;
- Four round-table discussions with participation of representatives of relevant ministries, agencies, institutions;
- At least 1000 participants, including representatives of local authorities, private sector, local community residents, NGOs, with improved knowledge and capacity of economic and environmental advantages of technology deployment;
- Four study tours with at least 100 participants in order to share effective practices;
- At least 20 local residents to receive affordable loans from financial institutions to deploy technology;
- At least three financial institutions and one local producer/importer involved in project;
- Two national conferences organized to disseminate project achievements at national level.

**Project beneficiaries:** Project beneficiaries are local communities situated in remote rural areas of Azerbaijan, as well as local authorities, private sector, NGOs and other relevant stakeholders. The current project will cover three pilot communities (totaling 200 households), three private sector representatives, and will have 220 direct project beneficiaries. It is intended to enhance replication of applied best practices in territories of the country, mainly focusing on remote rural areas.

As a result of project activities, total reduction in GHG emission will be 37.8 thousand tons per year, taking into account that each household will use 1 kW less energy from general electric power per day. Additionally, local communities will apply less pressure to forest resources, which will lead to increase of CO<sub>2</sub> absorption.

**Relevant stakeholders:** Ministry of Ecology and Natural Resources, Ministry of Economic Development, local authorities, private sector, NGOs.

- Ministry of Economic Development will support implementation of the financial component by creating access to long-term and low-interest loans through different state funds;
- Ministry of Ecology and Natural Resources will support project implementation by raising awareness of ecological importance of technology deployment;
- Local authorities will play the role of facilitator during implementation of project activities in target local communities and support practical actions;

- Private sector (financial institutions, producers/importers of stoves) will be involved as market players actively participating in project implementation;
- NGOs will be involved in the project implementation cycle and will be responsible for capacity building/awareness-raising activities and dissemination of best practices to other surrounding communities.

**Project duration:** 2 years

**Project budget:** Total budget: 550,000 USD

Promote application of efficient stoves at community level – 400,000 USD

Support for private sector to promote local production of technology – 150,000 USD

**Project sustainability:** Information campaigns, capacity building activities and study tours for demonstration of effective practices are designed to achieve project sustainability. Practical demonstration of advantages of applied technology will lead to replication of technology use by other communities.

The project will contribute to the country's sustainable development priorities (economic, environmental and social), as it will result in improved living conditions, creation of new jobs and improved ecological conditions (decreased pressure on forest resources, reduction in GHG emissions).

**Project deliverables:** At the community level, the pilot project will lead to significant results and will enable the demonstration of best practices to other local communities. Launching local production of the technology will lead to project sustainability and replication of effective practices.

**Project scope and possible implementation:** The project will cover two rural communities (totaling 200 households) situated in remote regions with less developed infrastructure (roads, gas/energy supply). All relevant stakeholders (state institutions, agencies, private sector, local authorities, NGOs, local communities) are interested in project implementation. In the past there were similar project initiatives, however they were at the individual level and lacked capacity building or financial components, and were therefore unsustainable.

**Risks:** The main risk of project implementation is low interest of local communities in technology deployment. This risk will be mitigated through effective awareness-raising activities to be organized during the project implementation period.

**Project monitoring and evaluation:** The project will be monitored by a Project Steering Committee to be formed under the current project. Representatives of different state institutions, agencies, NGOs, private sector and local authorities will be included in the Project Steering Committee. Project results will be assessed by external evaluators, as well as by relevant state institutions (Ministry of Economic Development, Ministry of Ecology and Natural Resource) responsible for project coordination.

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## Annex I. List of stakeholders involved and their contacts

Institutions	Representative	Contacts
<b>State organizations</b>		
Ministry of Ecology and Natural Resources	G.Suleymanov	gulmali.ciamte@gmail.com
Ministry of Ecology and Natural Resources, Forest Development Department	A.Guliyev	<a href="mailto:azad_guliyev1960@box.az">azad_guliyev1960@box.az</a>
Ministry of Economic Development	A.Cafarov	<a href="mailto:altay.cafarov@gmail.com">altay.cafarov@gmail.com</a>
Ministry of Industry and Energy	F.Muradov	<a href="mailto:feyzulla.muradov@gmail.com">feyzulla.muradov@gmail.com</a>
Climate change and Ozone centre under the Ministry of Ecology and Natural Resources	A.Mehtiyev	<a href="mailto:m_anar78@yahoo.com">m_anar78@yahoo.com</a>
National Academy of Sciences, Head of Radiation Division	I.Mustafayev	<a href="mailto:i_mustafayev@mail.ru">i_mustafayev@mail.ru</a>
<b>Public and private companies</b>		
Azenerji Open Joint-Stock Company	A.Heydarov	<a href="mailto:Abdulkhalig38@mail.ru">Abdulkhalig38@mail.ru</a>
State Oil Company (SOCAR)	H.Ahmadov	<a href="mailto:Hamlet.axmadov@socar.az">Hamlet.axmadov@socar.az</a>
State Oil Company (SOCAR)	M.Mehtiyev	<a href="mailto:m.mehtiyev@mail.ru">m.mehtiyev@mail.ru</a>
State Company of Alternative and Renewable Energy Sources of Azerbaijan Republic	C.Melikov	<a href="mailto:cmelikov@abemda.az">cmelikov@abemda.az</a>
State Water Agency under Ministry of Emergency Cases	S.Hasanzade	<a href="mailto:sahib540@mail.ru">sahib540@mail.ru</a>
Sumgayit Technological Park	S.Musayev	<a href="mailto:s.musayev@gmail.com">s.musayev@gmail.com</a>
Housing and Community Services of Baku	S.Mustafayev	<a href="mailto:togrul@mail.ru">togrul@mail.ru</a>
Municipality of Sabir settlement	N.Gadirov	<a href="mailto:nadqadirov@box.az">nadqadirov@box.az</a>
<b>NGOs</b>		
Azerbaijan Branch office of REC Caucasus	I.Aliyev	<a href="mailto:Issa.aliyev@rec-caucasus.org">Issa.aliyev@rec-caucasus.org</a>
"Ecooil"	M. Gurbanov	<a href="mailto:m_gurbanov@mail.ru">m_gurbanov@mail.ru</a>
"Ecolife"	S.Hasanov	<a href="mailto:h.sadiq@mail.ru">h.sadiq@mail.ru</a>
Independent expert (on energy and renewable energy sources)	Sh.Movsumov	<a href="mailto:movzumov@yandex.ru">movzumov@yandex.ru</a>