CTCN Technical Assistance
Request Submission Form

Please fill in the form in the grey spaces, by following the instructions in italic.

Country:	*Islamic Republic of IRAN*	**Date**	*15.11.2014*

Title	*Micro Combined Heat & Power Technology*

Contact information:

Please fill in the table below with the requested information. The request proponent is the organization that the request originates from, if different from the National Designated Entity (NDE).

	National Designated Entity	**Request Proponent**
Contact person:	*Hassan Jangavar*	*Bahareh Aliakbari*
Position:	*Expert of Energy Department*	*R&D Expert*
Organization:	*Center for Innovation and Technology Cooperation (CITC)*	*Tamkar Gas Equipment Company*
Phone:	*+98 21 61006073* *+98 21 66536413*	+98 21 76250330 +98 21 76250332
Fax:	*+98 21 61006100* *+98 21 66534813*	+98 21 76250331
Email:	*hjangavar@citc.ir* *hjangavar@yahoo.com*	*b.aliakbari@tamkargas.com* *br.aliakbari@gmail.com*
Postal address:	*P.O.Box:141554671, Tehran, Iran*	*P.O.Box:1657163871*

Geographical focus:

☐ *Community-based*
☐ *Sub-national*
■ *National*
☐ *Multi-country*

{If the request is related to the sub-national or multi-country level, please indicate here the areas concerned (provinces, states, countries, regions, etc.)}

Theme:

☐ *Adaptation to climate change*
■ *Mitigation to climate change*
☐ *Combination of adaptation and mitigation to climate change*

Sectors:

Energy sector

Problem statement*:*

Combined **H**eat and **P**ower (**CHP**) is one of the new High Technologies in Iran. Regarding its significant effects on reducing fuel consumption and environmental emissions, optimized techniques of energy supply is the best alternative for replacing conventional methods.

Enactment and enforcement of laws preventing indiscriminate usage, and supporting of optimized energy consumption, have provided a great potential and demand for Micro CHP (MCHP) market in the country, especially for its household use.

Unfortunately, the lack of domestic suppliers is the major problem of **CHP** projects in the country. Also, in order to gain users' confidence, it is obvious that a famous brand with an extensive network and prompt after sales service can guarantee entering into the market. Lower capacity of **MCHP** systems has increased the market size and customers in the country.

Considering the above mentioned statements, providing a product with a good quality and a famous brand along with perfect customer service, can guarantee the interesting of users for application of this eco-technology, and it would be possible to apply it at the national level.

Past and ongoing efforts*:*

PAST EFFORTS:

1- Study to identify the best technology for energy cogeneration
2- Implementation of some projects up to 35 MW in the country, only on the large scales
3- Implementation of CHP projects, only in the form of purchasing and installation of the equipment (high capacity).
4- Due to the existing infrastructure and feasibility study of market needs, small scales are highly demanded.
5- Government emphasis on developing the market of low capacity equipment.

ONGOING EFFORTS:

1- Transfer of technology through purchasing and installation of equipment
2- Localization of production of the equipment and providing after sales services

Assistance requested*:*

Due to the alignment of the mission and goals of **CTCN** in supporting of eco-friendly proposals and unique effects of this technology in reducing greenhouse gas emissions - reducing fuel consumption up to 36% and increasing production efficiency of heat and electricity up to 90% by using maximum capacity of fuel energy-preparing an international cooperation circumstance and attracting technology

from qualified owners by **CTCN**, can build confidence and encourage foreign suppliers to cooperate and transfer this technology to Iran.

It is hoped that necessary infrastructures for localization of MCHP technology will be prepared in the coming years.

Obtaining to the above mentioned goals requires the followings:

1- Searching and identifying suppliers with reputable brand (sourcing)
2- Business communication
3- Technology transfer
4- Technical supports & after sales services

Expected benefits:

Regarding the development of the Power Generation systems efficiency, energy saving is inevitable. As a new technology of power generation, CHP systems can enhance efficiency of energy cogeneration through recovery and using of high temperature exhausted gas for steam generation. The following figure illustrates units of a **CHP** or **MCHP** system which can supply the process of electricity and thermal loads production through the driving force of gas engine.

Optimized energy consumption is one of the main benefits of **CHP** system. For instance, generation of 35 units of electricity and 50 units of heat with current conventional power plants needs at least 172 units of Gas fuel. However, by using **CHP** technologies of cogeneration of electricity and heat energy, we can draw the same amount of energy by saving 72 units of losses in recovery process and using only 100 units of gas fuel. Clearly, using this technology has reduced energy consumption and carbon emissions up to72 units.

Finally, reduction of transmission losses and controlling of electricity demands at peak hours are among other advantages of this method.

Post-technical assistance plans:

1- *Technology transfer include:*
   - *1.1. Identifying Technology owners*
   - *1.2. Negotiation with technology owners*
   - *1.3. Receive and Review the proposals*
   - *1.4. Sign Contract*

2- *Technology Adapt to local conditions (market demand, skilled manpower, facilities, infrastructure, etc.)*
3- *Production (design, construction, installation of equipment, etc.)*
4- *The uptake of technology (encompassing technology is introduced into the society, study skills as public education)*
5- *technology development(integrating technology into the domestic skills and experience to achieve a new technology)*
   - *5.1. The prototype*

5.2. Lab scale
5.3. Mass Production

6- Technology dissemination (increased production, improved knowledge and skills learned at the regional level)

Key stakeholders:

Stakeholder	Role to support the implementation of the assistance
Ministry of Petroleum	Implementing the government policies and regulations related to the energy sector & gas branching supply as driving force
Ministry of Energy	Implementing the government policies and regulations related to the energy sector and providing required infrastructures for electricity buy and sell
Privet Sector	Financing, supply, installation, after-sales services of equipment
Department of Environmental	Reporting the reduction of carbon emissions
Universities and Research Institutes	Research and development to increase efficiency
Standard Organization	Development of national standards and certifying the produced equipment
Ministry of Housing and Urban Development	Issuing instructions to support construction

Alignment with national priorities:

Islamic Republic of Iran, while accepting the Kyoto Protocol in 2006, has enacted and implemented several laws for protecting the environment.

One of the most important topics studied in the reduction of carbon emissions, is the production conversion process of energy in 5th 5-years Development Plan of Iran (article 133).

Thought fullness of government in legislation and performance of laws preventing indiscriminate use of energy, and in supporting of proposals for optimization of energy consumption has led to supporting deployment and utilization of MCHP in the country, which indicates alignment of the mentioned technology with priorities of the government.

Also this request reflects the prioritization of CHP or and MCHP Technology for immediate action, based on the national GHG inventory and developed within the context of the Iran's 2nd national communication to UNFCCC.

Supporting legal documents can include:

- Initial Iran's National communication to UNFCCC, pages 114, 3rd bullet.
- Iran's second National communication to UNFCCC, chapter 5, section 5.3, pages 160 – 167.
- 5th 5-years Development Plan of Iran (2011 - 2015), article 133.
- General policies adjustment of consumption samples, article 7, 8th bullet.

- Energy Consumption Pattern Reform, articles 52 and 63.
- Adjustment of energy prices –"Targeted subsidies" - article 8.
- Priorities for Research and Technology of Iran, page 6, section B, first bullet, NO. 4.

Development of the request*:*

Energy use intensity is very high in Iran (2.1 on the basis of GDP in 2012); in addition, easy access to fossil fuels and relative inexpensiveness of them in Iran are among serious obstacles in the way of optimized energy consumption and promotion and stability of renewable energies.

Thus, the government has enacted and implemented different laws with the approach of energy prices adjustment from 2010; including energy consumption pattern reform in 2011, which was approved and promulgated in 75 articles and 20 amendments.

Under this law, the Ministries of Oil, Energy, Industry and Mining, Housing and Urban Development have been required to identify and implement energy efficiency methods.

Since the household and commercial consumers are one of the main sectors of energy demand in the country, and considering lossy process of electricity production in conventional power generation methods, it is inevitable that a new technology is highly needed for supplying energy demands of the household and commercial sectors.

All ministries and government agencies should try and cooperate with other institutions in performing and operating of the related laws in articles 45 and 46 of the Energy Consumption Pattern Reform.

Ministry of Petroleum has organized to apply the **MCHP** systems based on the Gas Engine for its effect on reducing of transmission losses, carbon emissions, NO_X emissions, energy cost, energy demand during peak usage, and for some benefits including widespread use and easy to install.

It is expected that installation of this system can reduce 10% of energy consumptions in the household sector, and consequently can save more than 260 billion dollars.

In this regard, the Ministry of Petroleum is responsible for financial supporting of proposals relating to fuel savings resulting from the use of this technology.

Moreover, Ministry of Energy is responsible for supplying of the necessary infrastructure for mechanisms of buying electricity from dispersed producers and connecting them to the network.

Expected timeframe:

Activities/ months	1-3	4-6	7-9	10-12	13-15	16-24
Identifying the companies with technical knowledge						
Business Communication						
Technology transfer through purchasing and installation of equipment						
Localization of production of equipment and after sales service support						

Background documents:

- Initial Iran's National communication to UNFCCC, pages 114, 3rd bullet.

http://unfccc.int/resource/docs/natc/iranc1.pdf

- Iran's second National communication to UNFCCC, chapter 5, section 5.3, pages 160 – 167.

http://unfccc.int/resource/docs/natc/iranc2.pdf

- 5th 5-years Development Plan of Iran (2011 - 2015), article 133.

http://parliran.ir/index.aspx?siteid=1&fkeyid=&siteid=1&pageid=3362

- General policies adjustment of consumption samples, article 7, 8th bullet.

http://maslahat.ir/DocLib2/Approved%20Policies/Offered%20General%20Policies/policy%2015-04-1389%20adjustment%20of%20consumption%20samples.aspx

- Energy Consumption Pattern Reform, articles 52 and 63.

http://www.ivma.ir/Files/Roles/2014-8-23-2-22-42.pdf

- Adjustment of energy prices –"Targeted subsidies" - article 8.

http://www.parliran.ir/index.aspx?siteid=1&pageid=3070

- Priorities for Research and Technology of Iran, page 6, section B, first bullet, NO. 4.

file:///C:/Users/PC-2/Downloads/1.pdf

Monitoring and impact of the assistance:

{Read carefully and tick the boxes below.}

☐ By signing this request, I affirm that processes are in place in the country to monitor and evaluate the assistance provided by the CTCN. I understand that these processes will be explicitly identified in the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor the implementation of the CTCN assistance.

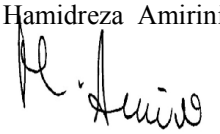
☐ I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:

NDE name: Center for Innovation and Technology Cooperation (CITC)

Date: *15.11.2014*

Signature: Hamidreza Amirinia



THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

Need help? The CTCN team is available to answer questions and guide you through the process of submitting a request. The CTCN team welcomes suggestions to improve this form.

>>> Contact the CTCN team at ctcn@unep.org