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Ahmadinejad's Gas Revolution: A Plan to Defeat Economic Sanctions

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Iran's plot to subvert U.S.-led sanctions

While Iran remains determined to pursue uranium enrichment activity on its way to become a nuclear power the call for United Nations Security Council sanctions against Tehran is louder than ever. Sanctions proponents have pointed to Iran's strategic vulnerability: its lack of refining capacity to meet domestic need for gasoline and other essential refined petroleum products. An increase in population since 1980 from 40 to 68 million people has pushed Iran's gasoline consumption up by nearly 13 percent annually over the past five years. As a result the country consumes far more gasoline than its refineries can provide. Production stands at 10.5 million gallons a day, compared with daily demand standing at 18.5 million gallons. With 43 percent of its gasoline imported, Iran is the world's second largest gasoline importer. A comprehensive gasoline embargo, so goes the thinking, could severely cripple the Iranian economy. Without imported transportation fuel the oil rich nation, OPEC's second largest producer, will be unable to power its vehicle fleet and social unrest could soon erupt, quickly undermining the Islamic Republic's radical regime.

Iranian President Mahmoud Ahmadinejad is fully aware of his country's Achilles Heel and is taking action to reduce its dependence on foreign gasoline through a three-pronged strategy which includes:

1. **Significant expansion of Iran's refining capacity.** While no refinery has been built in the U.S. in decades, leading to projected growth in demand for gasoline from foreign refineries from 10% of U.S. consumption today to 30% within 15 years, Iran's refinery infrastructure is undergoing one of the world's fastest expansions including the construction of a 225,000 barrel per day (bpd) refinery in Chah Bahar and a 115,000 bpd refinery in Qesham Island.
2. **Securing gasoline imports from friendly allies.** Iran is hoping to secure imports of refined products from Venezuela, an option that was discussed during Venezuela's President Hugo Chavez's visit in Tehran in July.
3. **Reducing the use of gasoline** through rationing, price controls and a shift to non-petroleum products.

In a recent interview with the Iranian news channel, Ahmadinejad revealed his plan for energy independence. He confirmed that Iran embarked on a crash program to insulate itself by converting the country's vehicles to run on natural gas rather than gasoline. Iran has the world's second largest natural gas reserve after Russia. Its 28.2 trillion cubic meters (over 900 trillion cubic feet) of proven gas reserve, 16% of the world's total, and much more yet to be discovered, essentially guarantee an uninterrupted supply of cheap transportation fuel for many decades to come.

A special committee set up by the government came up with a four-point program which includes:

1. Conversion of most existing cars to run on natural gas within five years at a rate of 1.2 million annually. This will begin with conversion of 600,000 public and governmental cars to NGV.
2. Phase out of very old cars (approximately 1.2 million) by 2010.
3. As of June 2007, most of the newly manufactured cars will have to be able to run on natural gas.
4. Within five years most of Iran's 10,000 refueling stations will be retrofitted to serve natural gas.

The Iranian government aims to have most of Iran's cars running on natural gas by 2015.

The tenets of Ahmadinejad's plan

1. Conversion

There are several ways to use natural gas in the transportation system. Natural gas can be a stand alone fuel or used in a car capable of alternating between two sources of fuel. Such a bi-fuel or dual-fuel vehicle car typically has two separate fuel tanks and is capable of running on either gasoline/diesel or gas. There are two main types of gas operated cars: those that use Liquefied Petroleum Gas (LPG) and those that run on Compressed Natural Gas (CNG). It is estimated that of the total 600 million cars on the road across the globe only 4 million are bi-fuel; 150,000 of these are in Iran today.

Source: Iranian Fuel Conservation Organization

The conversion of cars from gasoline only to bi-fuel operation is relatively simple, particularly in a country where unemployment surpasses 10% and labor is cheap. All that is needed is a minor engine adaptation, which includes changing spark plugs, pipes, catalysts and pressure sensors. It also requires the installation of a gas cylinder in the trunk of the car.

To achieve rapid conversion the country has thus far built over 107 conversion workshops of three types in 37 cities: workshops specializing in conversion of diesel engines, conversion of mini-buses, conversion of cars and vans. All together more than 114,000 vehicles have been retrofitted. Domestic auto manufacturers have prepared their existing after sale service network to service natural gas vehicles. To encourage Iranians to convert their vehicles the government subsidizes up to 85 percent of the conversion cost. The cost of conversion for the average Iranian motorist is about $55. The Iranian government provides incentives to CNG car buyers and has meanwhile decreased the gasoline subsides. As a result, despite the low cost of gasoline in comparison to the rest of the world, it is 3-4 times more expensive than natural gas.

2. Production of new NG vehicles

Iran is the Middle East's leading car manufacturer. In 2005 Iranian automakers produced nearly one million vehicles including 884,000 passenger cars and 104,000 heavy vehicles, altogether worth $11.6 billion. Iran's two major car manufacturers, Iran Khodro and Saipa, produced 553,000 and 413,000 vehicles respectively in 2005, with smaller companies making up the rest. Traditionally the Iranian government has tried to discourage automobile imports in order to reduce outflow of hard currency. To this end the government subsidizes the country's car industry while levying a heavy import tariff on foreign cars ranging between 100% and 300%. As a result, Iran imported only 10,000 cars in 2005. Such a level of government intervention enables Iran to influence supply and demand patterns in favor of natural gas cars. New public and governmental cars will gradually be CNG powered. Five OEMs are currently producing natural gas vehicles. So far more than 33,000 CNG cars have been produced domestically.

Source: Iranian Fuel Conservation Organization

3. CNG parts

According to the International Association of Natural Gas Vehicles construction of a CNG cylinder production factory with a nominal capacity of 120,000 cylinders per year has been completed and now supplies a portion of the country's requirements. Another CNG cylinder production factory is under construction in Esfahan with capacity of over 200,000 cylinders per year. Other CNG cylinder production factories are in process. Local compressor manufacturing companies are producing major parts of CNG station equipments with the co-operation of foreign companies. The government hopes to achieve production of 3 million gas tanks annually for five consecutive years.

NGVs in Iran as of August 2006

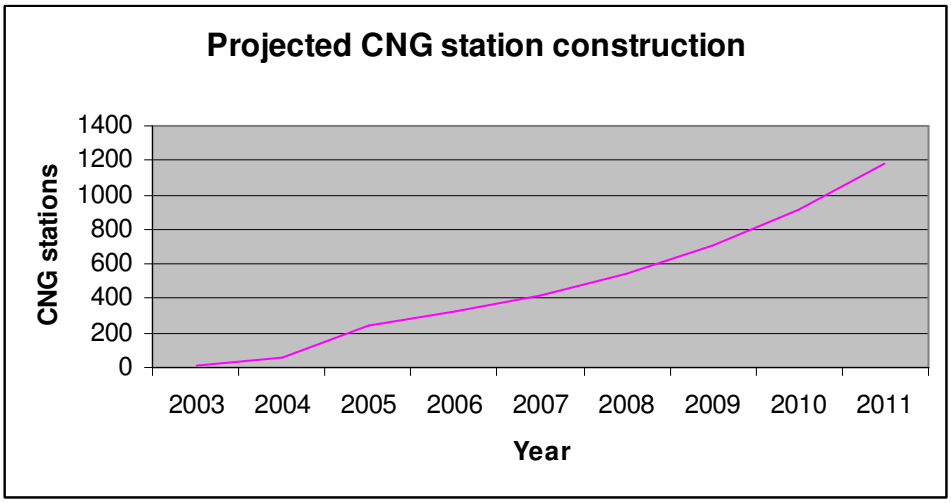
NGV's type	Total	OEM	Retrofit
Cars	145,884	31,198	114,686
Buses	2,404	2,234	170
Mini-buses	90	90	0
Trucks	14	14	0
Total	148,392	33,536	114,856

4. Refueling infrastructure

By September 2006, 326 CNG stations were constructed and in service and an additional 432 stations under construction by the government and the private sector. The total capacity of these service stations is more than 10,000,000 cubic meters per day. An additional 418 stations have been contracted and are planned to be built in the coming year. More than 560 cities and 3,226 villages now have CNG stations. The government plan is to retrofit all the country's 10,000 gas stations to serve natural gas in addition to gasoline and it is fully subsidizing the conversion to the tune of $300,000 per station.

CNG Stations in Iran as of August 2006

	Public	Private	Gasoline-CNG stations	Total
In service	210	16	100	326
Under construction	252	92	88	432
Under contract	88	174	156	418
Total	550	282	344	1176



5. Public Education

In order to ensure the rapid adoption of natural gas as an alternative fuel, the Iranian government has established the Iranian Fuel Conservation Organization (IFCO). Together with the National Iranian Oil Company (NIOC), IFCO has waged a multimedia public education campaign to promote the fuel and elucidate safety information.

Economic benefits of shifting to natural gas

Shifting to natural gas can achieve significant economic benefits for Iran. The more rapid fleet turnover will displace over 2.5 million inefficient gasoline and diesel vehicles, and a shift away from petroleum for transportation will free up oil for the export market as well as reduce the need to import refined petroleum products. In 2004, Iran's gasoline consumption stood at 16 million gallons per day (in comparison to 383 million gallons in the U.S.) 43 percent of Iran's gasoline is imported. A shift from petroleum to natural gas will thus not only save Iran between $3 and $4 billion per year on gasoline imports and additional $3 billion in gasoline subsides the government is currently providing but also free more Iranian oil to be sold in the global market. A daily saving of 9 million gallons of gasoline would provide Iran with an extra 450,000 barrels of oil per day for export, which, at $60 per barrel could generate over $9 billion a year.

Implications for the U.S.

For Iran, the rationale for the plan is mainly strategic. With most of Iran's cars running on natural gas Iran's refineries will be free to produce a greater proportion of essential non-gasoline petroleum products like jet fuel, which in the case of international sanctions will keep Iran's air force and commercial airlines intact, and diesel to power Iran's army, navy and factories. In a parallel effort to reduce its dependence on foreign gasoline Iran is working diligently to expand its refining capacity. Iran's refinery infrastructure is undergoing one of the world's fastest expansions including the construction of a 225,000 barrel per day (bpd) refinery in Chah Bahar and a 115,000 bpd refinery in Qesham Island. Iran is also hoping to secure imports of refined products from Venezuela, an option that was discussed during Venezuela's President Hugo Chavez's visit in Tehran in July.

If Ahmadinejad's plan for "energy independence" is implemented, within five years Iran could be virtually immune to international sanctions.

This approach reveals Ahmadinejad's conviction that a conflict with the West over his nuclear ambitions is inevitable and that his regime's survival depends on his ability to prepare his nation for a protracted period of life under international sanctions.

Ahmadinejad's gas revolution is a clear sign that Iran is preparing itself for the possibility of war and is developing a comprehensive economic warfare strategy to supplement its military and diplomatic initiatives. This strategy, which has largely gone unnoticed by the West, includes not only defensive tactics such as becoming energy self sufficient but also offensive tactics, like a recent initiative to weaken the U.S. dollar by launching an oil exchange that will trade oil in Euros.

Options for the U.S.

1. Reevaluate the utility of the sanctions option

While sanctions in general will no doubt have some impact on the Iranian economy particularly when it comes to manufactured products, it is unlikely that such sanctions would bring a change of international behavior, not the least a regime change. With growing tightness in the global energy markets Iran's oil and gas will be ever more valuable and it is likely to be able to subvert the sanctions regime and push its products to the market. Even if Iran exports less oil and gas due to the sanctions the economic damage will be offset by higher revenue caused by higher crude prices. When it comes to refined petroleum products, this paper concludes that the window of opportunity to cause economic pain is closing rapidly.

Policymakers who support economic sanctions should realize that this option is waning. Every year that passes makes Iran more resilient to sanctions.

In light of Iran's growing immunity to sanctions the U.S. should reassess the viability and effectiveness of this mechanism. If, after all, a decision is taken to pursue this option, the timeline for implementation should be shortened.

2. Slow down Iran's energy transformation

Through smart and consistent efforts the U.S. and its allies can slow down the process of Iran's transformation to natural gas and hence buy more time for sanctions to work. There are several bottlenecks in the Iranian plan. Implementation of the plan would largely depend on supplying at least 1.5 million gas tanks per year. CNG tanks are made from steel and composite materials and require a specialized production process. The U.S. can slow down the process by conducting clandestine sabotage operations against critical nodes in Iran's natural gas infrastructure. Sabotage attacks against factories producing CNG tanks and conversion workshops combined with punitive measures against European companies like TUV Austria and the Calgary based AFS which facilitate Iran's energy plan by supplying critical parts and providing essential services could have a cumulative impact on the program's implementation. Such an approach, however, is not going to stop the program; at best it could cause delays.

3. Devise a reciprocal economic warfare strategy

The U.S. must begin to answer Iran's economic warfare strategy with one of its own. More than five years since the onset of the global war on terrorism the U.S. still has no comprehensive economic warfare strategy to deal with oil rich radical countries. An effective economic warfare strategy has more to it than sanctions. It includes the use of innovative domestic and international energy policy, financial tools, trade levers, and advanced technology. Applied in unison, all of these advance the strategic goal of breaking the economic backbone of rogue countries. One tenet of this strategy should be the reduction of America's dependence on foreign oil and its susceptibility to supply disruptions. While Iran is taking meaningful steps to reduce its strategic vulnerability, the U.S. is doing the exact opposite when it comes to its energy security. The U.S. imports more than 60 percent of its oil and a growing portion of its imports come from countries which are opposed to the U.S. and its policies. By taking steps to minimize the risk of oil supply disruptions, the U.S. would be freer to implement its foreign policy goals, including the use of punitive measures against Iran, without suffering adverse impact on its economy.

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Anne Korin and Gal Luft are co-directors of the Institute for the Analysis of Global Security (IAGS).

IAGS is a non-profit public educational organization focusing on energy security. IAGS seeks to promote public awareness to the strong impact energy dependency has on our economy and security and to the myriad of technological and policy solutions that could help us move into an era of energy independence, and increase peace, prosperity and stability in the world.

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