

# Appendix: selected Iranian nuclear imports

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Country	Item	Date	Location	Potential Applications
<b>Argentina</b>	The Argentine Nuclear Energy Commission (CNEA) signed a contract to supply 115.8kg of 20 percent enriched uranium in 1988 but the nuclear fuel was not delivered until 1993. <sup>1</sup>	1988–93	University of Tehran Nuclear Research Center (TNRC)	Nuclear fuel
	Applied Research Institute (INVAP) concluded contracts with Iran to: <ul style="list-style-type: none"> <li>Supply a pilot-scale mill (canceled);</li> </ul>	1987	Yazd	Milling
	<ul style="list-style-type: none"> <li>Build a fuel fabrication pilot-plant (canceled);</li> </ul>	1987	Yazd	Fuel fabrication
	<ul style="list-style-type: none"> <li>Convert the 5MWt research reactor at the TNRC from using 93 percent enriched uranium fuel to burning 20 percent enriched uranium.<sup>2</sup></li> </ul>	1992	TNRC	Research reactor
	INVAP also discussed supplying a heavy water production pilot-plant, but talks were canceled. <sup>3</sup>	1992	TNRC	Heavy water
	Iranian officials requested that Argentina supply hot cells; the request was denied. <sup>4</sup>		TNRC	Plutonium reprocessing
<b>Belgium</b>	Ion Beam Applications supplied a 30MeV cyclotron. <sup>5</sup>	1991	Karaj	Calutron uranium enrichment research and development (R&D)
<b>China</b>	China supplied two subcritical reactors; an open tank facility and a graphite moderated reactor. <sup>6</sup>	Completed in 1992	Isfahan	Research reactor
	China built and installed a small (1mA) calutron. <sup>7</sup>	1992	Karaj	Calutron R&D
	China supplied a 27kWt miniature neutron source reactor (MNSR), 900g of highly enriched uranium (HEU) fuel, and heavy water. <sup>8</sup>	1994	Isfahan	Research reactor
	China built a heavy water, zero power, research reactor. <sup>9</sup>	1995	Isfahan	Research reactor
	Negotiations for the supply of a 30MWt heavy water research reactor were canceled due to technical and financial problems. <sup>10</sup>	1991–92	Isfahan	Research reactor
	China's Qinshan Nuclear Power Company and the Shanghai Nuclear Research and Design Institute agreed to build two 300MW pressurized water reactors (PWRs) in Iran. The deal is on hold. <sup>11</sup>	Agreement reached in September 1992	Site of proposed reactors changed from Darkhovin to Bushehr	Power reactors
	Iran plans to build a uranium hexafluoride (UF <sub>6</sub> ) conversion plant with Chinese assistance. Tehran expects the plant to become operational after 2000, but China appears to have canceled the deal. <sup>12</sup>	1996	Isfahan	UF <sub>6</sub> conversion
	Iran acquired at least one copper-vapor laser from China. <sup>13</sup>	1994	TNRC's Ibn-e Heysam Research and Laboratory Complex	Laser uranium enrichment research and development
	Iran acquired an unknown quantity of tributylphosphate (TBP), and may have received data on plutonium separation, from China. <sup>14</sup>	1994	TNRC	Plutonium reprocessing
	The Chinese Academy of Sciences' Institute of Plasma Physics built and installed a tokamak fusion research reactor. <sup>15</sup>	1993–94	Azad University	Data potentially applicable for designing thermonuclear weapons
	The Beijing Research Institute of Uranium Geology (BRIUG) assisted Iran with uranium exploration. <sup>16</sup>		Yazd	Uranium mining

<b>Czech Republic</b>	Skoda and Iran discuss the provision of equipment for the Bushehr nuclear power plant; the deal was canceled in 1994. <sup>17</sup>	1993	Bushehr	Power reactors
	Iran imported computer-numerical-control (CNC) lathes and vertical turning machines from the Czechoslovak firm Strojimport. Other foreign firms are establishing turn-key machine-tool factories, due to be completed in the late 1990s. <sup>18</sup>	1982–83		Weaponization, calutron manufacturing, gas centrifuge manufacturing
<b>France</b>	Iran loans Eurodif \$1 billion for the uranium enrichment plant at Tricastin. Iran was expected to buy 10 percent of Eurodif's three percent enriched uranium fuel. <sup>19</sup>	1974		
	The International Commerce Commission (ICC) ruled that France must repay Iran the \$1 billion and that Tehran would retain a small share in Eurodif. France has said it would not sell Iran enriched uranium. <sup>20</sup>	1991		Nuclear fuel
	Framatome signed a contract to build two 950MW PWRs in Iran; the deal was canceled in 1979. <sup>21</sup>	1974–79	Darkhovin (Karun)	Power reactors
<b>Germany</b>	Kraftwerke Union (KWU) began building two 1,300MWe reactors, but stopped construction in 1979. <sup>22</sup>	1974–79	Bushehr	Power reactors
	Leybold negotiated to sell a vacuum arc furnace to Iran. <sup>23</sup>	1991	Sharif University	Fuel fabrication and weaponization
	Leybold sold Iran vacuum pumps. <sup>24</sup>	1990–91	Sharif University	Gas centrifuge and calutron component
	Magnetfabrik Bonn supplied Iran with ferretic ring magnets, but denies they have nuclear applications. <sup>25</sup>	1993	Sharif University	Gas centrifuge component
	Sharif University approached the firm Thyssen about purchasing specialized ring magnets, but were refused. <sup>26</sup>	1991	Sharif University	Gas centrifuge component
	The firm Karl Schenck of Darmstadt supplied Iran with at least one balancing machine. <sup>27</sup>	1991	Sharif University	Gas centrifuge component
	Iranian officials signed a letter of intent pledging an interest in buying the German firm Sket Magdeburg, a machine-tool manufacturer. Tehran wants to purchase the firm either as a whole or in parts. <sup>28</sup>	1996		Weaponization, gas centrifuge manufacturing, calutron production
<b>India</b>	India discussed building a 10MWt research reactor but canceled the negotiations. <sup>29</sup>	1991	Moallem Kalayeh	Research reactor
<b>Italy</b>	Italy's Ansaldo, a division of Finmeccanica, was contracted by KWU to supply the Bushehr reactors with eight steam condensers; the shipment was blocked indefinitely during the Iran-Iraq war. <sup>30</sup>	1976	Bushehr	Power reactor
	In 1993, Italian customs in Porto Marghera seized the steam condensers as they were bound for Iran. <sup>31</sup>	1993	Bushehr	Power reactor
<b>Pakistan</b>	According to German intelligence, Pakistan may have re-exported URENCO centrifuge design information to Iran. <sup>32</sup>		Sharif University	Gas centrifuge production
<b>Poland</b>	Iran tried unsuccessfully to buy nuclear power reactor components from the unfinished Zarnowiece VVER-440 plant. <sup>33</sup>	1994	Bushehr	Power reactor

<b>Russia</b>	As part of the Russian-Iranian nuclear accord, Moscow agreed to: <ul style="list-style-type: none"> <li>• Complete the Bushehr VVER-1,000MW reactor (work ongoing)</li> <li>• Build a 30–50MW light water research reactor (canceled)</li> <li>• Deliver 2,000 tons of natural uranium (status uncertain)</li> <li>• Construct a uranium mine; limited assistance has been provided, although it is not clear whether Moscow was fully aware of the activities</li> <li>• Negotiate the construction of a centrifuge plant (canceled)</li> <li>• Build an APWS-40 desalination plant made by OKBM Mechanical Engineering (status uncertain).<sup>34</sup></li> </ul>	Signed in January 1995	Bushehr  Yazd	Power reactor  Research reactor  Raw uranium  Mining and milling  Uranium enrichment  Small reactor
<b>Slovakia</b>	Italian customs officials seized ultrasonic test equipment that was being shipped from Slovakia to Iran through Italy. <sup>35</sup>	1995		Test welding in reactors, nuclear fuel, and gas centrifuges
<b>South Africa</b>	According to European officials, South Africa supplied Iran with a large quantity of uranium concentrate (yellowcake). In 1996, South African officials denied the allegations, saying it considered providing uranium to Iran but canceled the deal. <sup>36</sup>	1988–89		Milled uranium
<b>Switzerland</b>	AGIE and Charmilles Technologies sent electrical discharge machinery (EDM's) to Iran. <sup>37</sup>	1993	Sharif University	Gas centrifuge manufacture and nuclear fuel fabrication
<b>Ukraine</b>	Turboatom signed a contract with Russia's Zarubezhatomenergostroy to supply two turbines for the Bushehr reactor; the deal was canceled in 1997. <sup>38</sup>	1996	Bushehr	Power reactor
<b>United Kingdom</b>	Air Products, British Nuclear Fuels, Fisons, and Leeds & Northrup allegedly sold Iran fluorine gas, a precursor for making UF <sub>6</sub> gas. <sup>39</sup>	1991	Sharif University	UF <sub>6</sub> production
	High-speed cameras and flash x-ray equipment may have been delivered to Iran. <sup>40</sup>		TNRC?	Weaponization
	British customs seized 55kg of maraging steel that was bound for Iran. <sup>41</sup>	1996	Sharif University?	Gas centrifuge production
<b>United States</b>	The U.S. supplied Iran with a 5MWt pool- type research reactor, hot cells, and HEU fuel until 1979. <sup>42</sup>	1967	TNRC	Research reactor, plutonium reprocessing, and nuclear fuel
	Jeffrey Eerkens sold Iran four 16µm lasers. <sup>43</sup>	1978	Ibn-e Heysam Research and Laboratory Complex	Laser enrichment R&D
	Reza (Ray) Amiri and Mohammed (Don) Danesh were indicted for sending oscilloscopes, logic analyzers, and pulse generators to Iran. <sup>44</sup>	April 1989 to October 1990	Sharif University?	Weaponization and gas centrifuge production

# Endnotes

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