

## **German Nuclear Export Policy and the Proliferation of Nuclear Weapons - Another *Sonderweg*?**

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Thirty years ago German nuclear exports were one of the hottest issues in nuclear non-proliferation. At that time agreements concluded with Brazil and Iran paved the way for the export of up to 16 nuclear power plants and – in the case of Brazil – the delivery of nuclear enrichment, fuel production and plutonium separation technology. The German nuclear industry – supported by a Federal Government headed by a social democratic Chancellor – had just reached a level where it was able to produce cutting-edge nuclear technology and it was anxious to sell it to whoever might be suitable. The Federal Republic of Germany as a non-nuclear weapons state had insisted at the time – mainly driven by Social Democrats – that it was allowed to develop, produce and operate technology encompassing the whole nuclear cycle. In that regard it was the only non-nuclear weapons state (except Japan) that was pursuing this special path (*Sonderweg* in German). In 1975, the U.S. Government as well as the nuclear non-proliferation community was highly critical of this German *Sonderweg* and argued that in particular the export of German nuclear technology might further nuclear proliferation.<sup>1</sup> There was a general sense that the transfer of such technologies by Germany, Japan as well as by France could lead to an erosion of the Nuclear Non-Proliferation Treaty from 1968.<sup>2</sup>

The German Sonderweg did indeed damage the nuclear non-proliferation regime – however not as deeply as it was assumed in 1975 – and the strife over German nuclear exports damaged transatlantic relations as well. Today, however, the picture is quite different: Germany is the first major industrial country to phase out nuclear energy completely (done by a government coalition led again by a social democratic Chancellor) and this has impacts on its nuclear export policy. Paradoxically, this new German Sonderweg is not necessarily good news for international non-proliferation efforts.

This paper is going to reflect on the changes that German nuclear export policy has undergone during the past 30 years and will survey the consequences that these changes have brought about with a view to the goals of nuclear non-proliferation. It starts with a self-critical analysis of the German Sonderweg in the 1970s and how this Sonderweg was contained as a consequence of international diplomatic efforts. It then turns to the fundamental changes that took place in Germany during the 1980s and 1990s when the anti-nuclear movement became so strong that support for nuclear energy as well as for nuclear exports faded away. In the third part it deals with the consequences for nuclear energy and nuclear exports after the Red-Green coalition (SPD and Green Party) was elected into government in December 1998. Finally, the impact of the Red-Green coalition nuclear export policy in terms of its consequences for nuclear non-proliferation will be discussed.

### ***1. Germany's nuclear Sonderweg in the 1970s***

In looking at the current debate about Iran's nuclear program one is somewhat struck by similarities between the ambitions of Iran today and of Germany in the early 1970s. Both governments not only claim(ed) the right to use nuclear energy for the production of electricity, both are (were) also demanding the right to utilize the full nuclear cycle, i.e. to have enrichment facilities as well as facilities that would allow the reprocessing of plutonium and the later use of plutonium in fast breeder reactors. While, in principle, it is not forbidden under the Nuclear

Non-Proliferation Treaty to possess these technologies, there have been various attempts by the U.S. and later other governments too to convince non-nuclear weapons states not to make use of these technologies since their potential for abuse is too great. Enrichment facilities can easily be used for the production of highly enriched uranium (HEU) and reprocessing facilities can be used for the separation of weapons grade plutonium. In contrast to Iran, which attracted suspicion since it pursued these technologies in secret, the German demand was seen as representing a basic legitimate civilian concern and, thus, successful attempts were made to arrive at cooperative, multilateral solutions. One solution was the creation of a multilateral enrichment organisation (URENCO) founded in 1970 which had the purpose of combining German, British and also Dutch efforts towards enriching uranium at a low level for the use within light water reactors.

Most concerns existed with regard to the export of enrichment and reprocessing technology by the German company Siemens KWU to Brazil, which at the time was not a member of the Nuclear Non-Proliferation Treaty and which had obviously no intent to accede to that legal instrument. The German side pointed in 1975 to the bilateral safeguard agreement that had been concluded between Brazil and the International Atomic Energy Agency (IAEA) and which was in line with the standard safeguard agreement INFCIRC/66. Under such an agreement, all facilities delivered would have been under permanent supervision by the IAEA. However, since the U.S. was assuming that Brazil might take the German technology in order to build a secret military facility at another place, the Ford-Administration as well as the Carter-Administration strongly objected to the delivery of the whole nuclear cycle technology to a country such as Brazil which had not signed a full-scope safeguards agreement.

The U.S. did not succeed in convincing the German government to cancel the agreement, however, within the framework of the newly established Nuclear Suppliers Group (NSG) they were able to establish as a new standard that any further transfers of sensitive technologies (in

particular enrichment and reprocessing) should be dealt with extreme caution and should be discussed in advance within the framework of NSG. Later, the U.S. went further by first banning sales of such technologies from U.S. companies and, later, by passing the Nuclear Non-Proliferation Act of 1978.<sup>3</sup> Through the Nuclear Non-Proliferation Act the U.S. used its dominant position in the civil nuclear market in order to enforce new non-proliferation standards upon others that went beyond the NPT. First and foremost, it made it almost impossible for states and companies using U.S. nuclear technology, licenses or nuclear fuel to export reprocessing and enrichment technologies. This piece of legislation was an early case of U.S. unilateralism reflecting the determination of the U.S. to put through changes in the non-proliferation regime that they thought were needed in order to avoid an erosion of the NPT-regime and for which they saw no means available within the established multilateral frameworks.<sup>4</sup> From that time on the German government never again encouraged companies such as Siemens KWU to export these sensitive technologies to countries outside the Western world.

This conflict with the U.S. over nuclear exports was dealt with in the scholarly and political debate in Germany primarily as a case of a transatlantic dispute that reflected the growing maturity and self-assertiveness of the Federal Republic of Germany.<sup>5</sup> For the first time, the West-German Government had openly defied the U.S. and it seemed that nuclear non-proliferation policy and nuclear export control was an area where Germany was ready to invest political capital.<sup>6</sup> Some pointed to a role the Federal Republic played for the first time: the role of the defender of the principles of an international order (in this case the international nuclear order) against unilateral attempts by the U.S. to change basic rules of that order.<sup>7</sup>

There has never been a self-critical debate within Germany about the wisdom of the German non-proliferation policy, in particular the dogged insistence on exporting sensitive nuclear

technology to Brazil and in keeping open the option of an own full nuclear cycle. On the contrary, actors of that time still boast about their resistance against U.S. dominance and imperialism.<sup>8</sup> It was a beautiful convenience of political self-assertiveness (i.e. the outrage over U.S. unilateralism, the necessity to demonstrate independence and to defend multilateral principles) on the one hand and the business interest of major companies such as Siemens KWU and nuclear scientific centers on the other hand. In looking at the situation with hindsight one cannot but come to the conclusion that the German non-proliferation policy at that time was wrong and misguided with detrimental consequences that are at the bottom of some of the most serious current crises:

- Regarding Brazil, the fear of the U.S. that the military government of Ernesto Geisel might establish a secret nuclear program by using the German technology of enrichment and reprocessing turned out to be correct. Brazil had actually run such a program; however, it suffered under a lack of funding and was eventually terminated in 1990 after a return to civilian government.<sup>9</sup> If the civilian Brazilian government had not stopped that program, Germany would have borne the main responsibility for spreading nuclear proliferation to Latin America.
- Regarding the German Sonderweg in terms of mastering and controlling the whole nuclear cycle, the joint URENCO enrichment program that was pursued in the Dutch city of Almelo was initially poorly safeguarded and a young Pakistani nuclear scientist named Abdul Qadeer Khan was able to steal enrichment technology and transfer it to Pakistan. By the same token, the enrichment technology that had been developed there found its way to South Africa, and with it, the Republic of South Africa was able to construct up to ten nuclear bombs in the 1980s. In view of the fact that the Pakistani nuclear expert later transferred the enrichment technology to Iran and North Korea (and almost to Libya), it must be stated that the outburst of German self-confidence and its defense of multilateral principles in the 1970s have actually helped these four

states to become nuclear weapons states, whereby it has to be noted that South Africa gave up its nuclear weapons in 1990 after the end of the apartheid-policy and the shift in power from the white minority to the black majority.

- The overall laxness of German export control policy in the field of dual-use items and technologies in all fields (nuclear, biological, chemical and missiles), the discovery of the chemical weapons facilities in Rabta (Libya) in 1988 (which had been delivered by a German company) and the huge involvement of German companies in the Iraqi weapons of mass destruction programs developed into major crises for the German government. They demonstrated how unbalanced the German export policies in all fields were – not only in the nuclear field. This led to a major and substantial reform of export control policies in 1989 and in 1992 in all areas of dual-use technologies and items for weapons of mass destruction and missile technology. Since then Germany has the most elaborated and strictest export control policy in Europe and has included legislation that even makes the assistance of German nationals in weapons production a crime – wherever and under which circumstances this may take place.<sup>10</sup>

## ***2. Phasing out nuclear energy in Germany***

Instead of a self-critical debate about the pros and cons of a self-assertive nuclear Sonderweg, the debate in Germany went a quite different way. Beginning in the late 1970s the Anti-Nuclear Movement in Germany gained momentum. It started in 1976 with protesters trying to prevent construction of the Brokdorf (Schleswig-Holstein) Nuclear Power Plant and continued in the coming years by often violent mass demonstrations against the planned reprocessing facility in Wackersdorf (Bavaria) and the construction of the Fast Breeder in Kalkar (North Rhine Westphalia) as well as against other nuclear installations. Particular efforts were undertaken to prevent the creation of a final deposit for nuclear waste at Gorleben located in the eastern part of the former Federal Republic of Germany.

What gave these protests so much momentum was that the organizers – some of them hold high level government positions today – combined the fight against nuclear power stations and other nuclear facilities with anti-war sentiments. Concerns and *angst* about nuclear energy risks and against nuclear war were lumped together. These fears formed the basis of a strong anti-nuclear movement from which the Green Party evolved in 1983 and which gained much support within the ranks of the Social Democratic Party (SPD).

The incidents at Three Mile Island (March 1979) and Chernobyl (April 1986) had a great impact on furthering the anti-nuclear movement. Contrary to the assertions of the German nuclear industry and of Federal and *Laender* Governments these incidents seemed to militate in favor of those who had argued that nuclear energy cannot be controlled perfectly and that major catastrophes cannot be avoided. After Chernobyl no new power plants were planned or built, the reprocessing option was already given up in 1983, the Fast Breeder was never finished (the site has since become the scene of a major amusement park) and the nuclear waste deposit at Gorleben remains unfinished and is highly disputed. Interestingly enough, the coalition government led by Helmut Kohl and his Christian Democratic Party and the Liberals (which governed from 1982 until 1998) made no attempts to revitalize nuclear energy in Germany although in their rhetoric they remained in favor of it. They simply left nuclear energy at a standstill.

While the Kohl government never stated in public that they were downsizing the aspirations of their nuclear policy, even to a degree where they were in fact accepting the slow phase-out of nuclear energy, the Green Party as well as the Social Democratic Party (SPD) were embracing the idea of an open “Ausstieg” (exit) out of nuclear energy in general. After winning the 1998 elections to the German Bundestag, their joint program envisaged the phase-out of nuclear energy within reasonable time frames, nevertheless, as soon and as thoroughly as possible. In June 2000 they already finalized negotiations with industry about a phased process in

which energy production by nuclear power plants was to be terminated within 20 years. In April 2002 new legislation went into force according to which

- the phasing out of nuclear energy – due to the inherent security risks – became the stated goal of German nuclear policy;
- no licenses for new nuclear power plants were supposed to be issued;
- existing nuclear energy plants may be operated until their regular operating period of 32 years had been reached or until the overall total of 2,623.3 billion kilowatt hours have been produced;
- Reprocessing of burned nuclear fuel will be banned by July 1, 2005. Afterwards only final deposition of nuclear waste is to be allowed. Nuclear power plants will have to store burned out nuclear fuel at site.

This legislation has been implemented and is going to continue at least until the end of the current legislative period. In case the Christian Democrats and the Liberals regain power in 2006, they have promised to change this legislation and to keep further civilian use of nuclear energy open. Whether this results in the resumption of nuclear energy on a large scale, however, is questionable. There is one major reason for keeping nuclear energy alive in Germany: otherwise it will become difficult to achieve the self-proclaimed goals of reducing Carbon-Dioxid emissions.<sup>11</sup> On the other hand, one knows how much anti-nuclear emotions can be rekindled and how politicians would behave under the pressure of exaggerated masses demanding to live free of all nuclear fears.

### ***3. Consequences for nuclear exports***

Even before the Red-Green coalition in Germany began to terminate nuclear energy production in Germany, the conditions under which German companies were envisaging nuclear exports did change fundamentally and so did the issue areas of nuclear export policy. After the Three Mile Island incident and above all after the Chernobyl disaster, the number of new

nuclear power plant projects dropped considerably. It was only during the past few years that the number of such projects has slowly grown, mainly due to the growing demand for electrical energy in Asia. As a consequence, German export oriented companies shifted their attention away from the export of large new nuclear power plants towards various export related activities:

- The continuation of “old” construction contracts for large nuclear facilities that had been suspended for years and decades;
- The provision of nuclear services, i.e. a couple of interrelated services such as modernization of components of older power plants, development and sale of new security and measurement technologies, delivery with nuclear fuel, disposition of burned out fuel rods;
- The modernization of existing Soviet-type nuclear power plants in Eastern Europe and Russia.

A special case in kind was the Hanau Mox-facility, which was constructed in the early 1990s and which has been idle since then due to political restrictions which prevented it from going into operation. There have been two attempts to sell this facility which will be described here later.

In coping with the anti-nuclear political attitude of the German government, most companies in Germany involved in the nuclear business have either given up or have downsized their respective nuclear businesses. Some have merged with French companies or have bought up companies in foreign countries and are operating from there. The largest German producer of nuclear power plants and other facilities, Siemens KWU, merged in early 2001 with the French company Framatome to form the new company Framatome ANP, which since has become the leading provider of nuclear technology in the world. The headquarters of the company is located in Paris, not in Munich; 66 percent of the shares today are owned by the French company Areva, 34 percent by Siemens. The company has a staff of 14,000 employ-

ees worldwide with an annual turnover of more than 2.6 billion Euro. By this move, Siemens can circumvent the difficult German nuclear security regulations which often have no other purpose than to prevent any nuclear related activities. In order to operate their business in the U.S. more efficiently, Siemens had already bought up the Advanced Nuclear Fuel Corporation in the U.S. (later called Siemens Nuclear Power Corp.) in 1987. In the field of nuclear fuel production Siemens has cooperated with the French company Cogema and has outsourced Mox-fuel production to Cogema. The service and nuclear fuel business with Eastern Europe is run by a company called European VVER Fuels (EVF), which had been founded by Siemens, Framatome and Cogema. As these examples show, under conditions of globalization there are a couple of opportunities for companies to circumvent restrictive and anti-nuclear legislation in nation states by mergers, acquisitions and outsourcing. As in other areas too, foreign affiliate sales are representing a growing share of international economic activity and are larger in volume than international trade.<sup>12</sup>

For national governments this translates into lesser leverage in the field of nuclear export policy. Indeed, the areas in which the current Red-Green coalition might influence nuclear export policy have been narrowed down considerably: only those items that are actually produced in Germany and exported from Germany to countries outside the European Union are subject to German national export control regulations. And it seems that it is the policy of companies such as Siemens to produce nuclear facilities and items in a way that German export legislation is circumvented (by exporting components to France and by re-exporting them from there).

German nuclear export policy as an effective form of policy thus only takes part in marginal areas, the MOX-export license being the only major exemption. There have been more or less desperate attempts to regain influence by putting up hurdles against the import of electricity originating from nuclear power plants in Eastern Europe that have been built or modernized

by German companies. In December 2000 the former German Minister of Economics Werner Mueller was providing draft legislation that would have allowed the German Government to prevent German utilities from importing electricity from Eastern Europe or elsewhere that had been produced in nuclear power plants.<sup>13</sup> The actual legislation passed in 2001 – the Energy and Gas Provision Act (Energiewirtschaftsgesetz) – turned out to be less severe and only renders the German Government the right to proceed against the import of electricity if it turns out that this would put providers of renewable energies at disadvantage.<sup>14</sup> The liberalization of European energy markets – in particular of the electricity market – have progressed however to a degree that such attempts might eventually turn out to be futile.<sup>15</sup> Many people have deplored that globalization undermines political power and reduces the influence of the state on the economy and its actors. In looking at these examples one is tempted to say that globalization sometimes might be also a benign force preventing the zeal of politicians from unfolding and from creating further damage.

There are NGOs which have become alarmed by this trend and which have started campaigns to boycott Siemens in order to force the company to abandon the nuclear business entirely. In particular the International Physicians for the Prevention of Nuclear War (IPPNW) have been extremely active in this field and have also extended their activities to Brussels and London with the intention of impeding credit financing of nuclear installations by the European Bank for Reconstruction and Development and other European institutions.

### **Old contracts and nuclear energy cooperation agreements**

From the 1970s there are still contracts involving the delivery of German nuclear power plants or nuclear power components that have not been fulfilled. The most prominent one was the Bushehr nuclear power plant in Iran. But also the Angra nuclear complex in Brazil and the Atucha plant in Argentina have to be mentioned here.

Regarding the Bushehr plant, the construction work was terminated after the Iranian revolution in 1979.<sup>16</sup> In 1991 the Iranian government approached Siemens KWU with the intention of resuming the construction work at Bushehr. The German government under Helmut Kohl at that time was ready in principle to discuss matters with Iran hoping that the resumption of construction could be conditioned upon greater transparency on the side of the Iranian nuclear program. The German government, however, was reluctant to risk a conflict with the U.S. Administration and ruled out the option of licensing the delivery of the nuclear power plant. Since the Reagan Administration nuclear cooperation with Iran has been ruled out by the U.S. and Germany as well as others who have been subject to heavy U.S. pressure in order to achieve that goal.<sup>17</sup> As a consequence, Iran turned to China and Russia and eventually Russia agreed to complete one part of the Bushehr complex. It has been argued that the continuation of the German-Iranian cooperation in Bushehr would have contributed to more transparency with regard to the whole Iranian nuclear program and, in theory, could have eased the current standoff over Iran's nuclear program.<sup>18</sup> This might be true, always taking the true intentions of the Iranian government into account, however.

The Angra-complex in Brazil was another old contract from the 1970s that was resumed in the 1990s. In Angra, three power plants had been originally planned, one of them (Angra I) had been constructed by the U.S. company Westinghouse in 1985. Work on the second and the third one, Angra II and Angra III, was interrupted in the 1980s. When the construction work on Angra II was resumed in 1994 and finalized in 2000, the German government had no objections to this project and the reactor was loaded and put into operation. Angra III is still pending but there is no enthusiasm within the ranks of the Red-Green coalition to promote the export. So far, the Brazilian government has not insisted in continuing work on Angra III.

The Atucha complex in Argentina consists of two nuclear power plants, one of them was constructed by Siemens in 1974, the other (Atucha 2) is still under construction and bedeviled by

financial problems. Atucha 1 has been subject to serious technical problems, which even caused the Red-Green coalition in 2000 to issue a federal financial guarantee (Hermes Bürgschaft) to allow Siemens KWU to do the necessary repair work and to modernize parts of the plant. Atucha 2 is still pending.

Closely related to these former agreements on the sale of nuclear reactors by the German company Siemens KWU there are also state-to-state agreements from the 1970s on nuclear cooperation between the Federal Republic of Germany and Brazil as well as Argentina. There have been debates within the Red-Green coalition on whether these agreements should be denounced or altered in such a way that nuclear energy is no longer the subject of cooperation but rather that technological assistance in the field of renewable energies becomes the focus instead. It appears that so far such proposals haven't generated too much interest in either Argentina or Brazil and that the future of these agreements is open. Most observers, however, agree that these treaties have lost their substance some time ago.

### **The Hanau Mox facility**

The only case of political significance in German nuclear export policy of recent years was the case of the Hanau MOX facility, which was subject to requests for export licenses to Russia in 2000 and to China in 2003. In both cases, notably in the case of Russia, the export of the MOX facility could have marked a critical gain in terms of international non-proliferation efforts. The Red-Green coalition, however, was determined to block these sales for one simple reason: they didn't want to allow the export of a facility that would have created the impression that the civilian use of nuclear energy was a sensible thing. Although the Red-Green coalition was not able to deny the licenses, it did somehow succeed in making the sale impossible. In the one case it did this by preventing a funding plan, in the other case by creating a political framework which made it impossible for the customer (China) to further pursue the idea of an import.

In order to understand the non-proliferation related aspects of the Hanau MOX facility one has to take into account that one of the largest proliferation problems today is the secure storage and final disposition of weapons grade plutonium coming from the dismantling of nuclear weapons in both Russia and the U.S. Both nuclear weapons states have dismantled nuclear weapons on a large scale during the past 15 years and are withdrawing 34 tons of plutonium from the military sector. In September 2000 both states concluded a treaty on the management and storage of weapons-grade plutonium.<sup>19</sup> Mixed oxide (MOX) technology plays an important part in this agreement: The U.S. plans to use 25.5 tons of its 34 tons plutonium as mixed oxide fuel; Russia plans to use almost the entire amount as MOX fuel.

One problem is that both Russia and the U.S. have no major experience with MOX technology which was developed in Germany and has been in use there as well as in Belgium and other countries since the seventies. It involves blending separated plutonium with lightly enriched uranium in a ratio of approximately one to twenty-five (i.e. up to 4.5 percent plutonium per unit) to create nuclear fuel for light-water reactors. With MOX technology it is possible to degrade up to 50 percent of plutonium (even of weapons grade plutonium) into other elements and to transform the remaining plutonium into a state in which it is no longer suitable for weapons.<sup>20</sup> The MOX facility with the largest capacity and the most progressed technology is the Siemens MOX facility at Hanau near Frankfurt. It was built in the early 1990s and has the capacity to convert 120 metric tons of heavy metal per year. However, the MOX-facility has been idle since its construction in 1995, because the government of Hesse at that time was successful in preventing the Hanau facility from becoming operational. After the federal elections in 1998, the Siemens Company abandoned hope that this facility can be put into operation in Germany.

Another problem is that Russia has no money to invest in MOX technology and to construct the necessary facilities. Hence, it was agreed within the framework of the G8 Summit at Oki-

nawa in July 2000 to devise a scheme for securing the funding of MOX facilities and the concomitant modifications at existing nuclear power reactors in Russia and Western countries. As a consequence there were proposals either to use the MOX facility in Hanau for the conversion of Russian weapons plutonium into nuclear fuel or to export the facility to Russia. The idea of using the existing facility in Hanau was given up already in 1996, i.e. at a time when the conservative coalition under Helmut Kohl was in power. The Kohl government, however, concluded a trilateral agreement early in 1998 involving France and Russia with the aim of beginning cooperation which would allow Russia to embark on the MOX technology.<sup>21</sup>

The proposal to export the facility to Russia was made in 2000. The Russian government wanted to acquire the whole facility and to transfer it to Russia, where it was to be modified. This request posed an extreme problem for the Red-Green coalition. On the one hand it was ready to contribute to the final disposition of weapons grade plutonium; on the other hand it resisted the MOX technology in principle. MOX was considered to be a dangerous technology that would entail additional proliferation risks (theft of plutonium) as well as environmental risks. This assessment of the MOX technology was shared for a long time by the U.S., and indeed the use of MOX technology was banned in the 1970s because it was part of a plutonium economy that was to be avoided. It was only in the mid 1990s, after a study on plutonium disposition was issued by the National Academy of Science, that the assessment of MOX in the U.S. underwent a fundamental change. In the aforementioned study MOX technology was considered to be the best possible technology available (despite its risks) to do away with as much plutonium as possible within limited time frames. The alternative technology – final disposition through immobilization – was described as being unproven, too expensive and full of weaknesses and risks. In particular, it was argued that immobilization would entail the risk of retrieval, besides that the number of permanent storage sites was limited and hardly available at a size to take up the huge amounts of Russian and American plutonium.<sup>22</sup>

The Red-Green coalition was posed with a dilemma: either it was to follow the recommendations of the study of the National Academy of Science and the consensus within the G8 and would license the export of the facility or it was to reject the export license. Among the Greens and the many NGOs supporting them the issue became very emotional. Foreign Minister Fischer and Chancellor Schröder were asked to withhold the license. Demonstrations were held and anti-nuclear groups demanded the final closing and dismantlement of the Hanau facility. The main fear of many Greens and NGOs was that supporting the MOX option in general would contradict – and most likely endanger – the phasing out of nuclear energy in Germany after it had just been agreed upon and at a time when the Government was just casting it into new national legislation. Foreign Minister Fischer was under pressure from the U.S. as well as from France and Russia to license the export, after he had voiced at various occasions that the peaceful disposition of Russian plutonium was the most important task of non-proliferation policy and a matter of human survival.<sup>23</sup> In terms of legal matters, the export of the facility could hardly be prevented, because according to the German Foreign Trade and Payments Act an export application of such a facility could only be rejected if it would upset the peaceful coexistence of nations or would do decisive damage to German national interests. Thus, the Red-Green coalition seemed to have almost no other option than to allow the export to happen.

Eventually the domestic concerns – i.e. not to endanger the planned phasing out of nuclear energy – prevailed and the Red-Green coalition managed to prevent the export from happening through other means. The Russian government needed a lot of money to pay for the acquisition, the transfer and the modification of the facility (more than one billion US Dollar) and it demanded that this money must come from the G8. The German government was relieved to see that there were not enough funds coming together within the G8 and, hence, could argue that it was open with regard to the export license, but was not ready in principle to put money into the MOX project. Hence, the export of the MOX-facility to Russia faltered because Ger-

man funds were lacking, while at the same time the German government was ready to provide a lot of money for the exploration of immobilization technologies in Russia, something the Russian government is definitely not interested in. To put it bluntly, the motive not to endanger the just begun process of nuclear energy phase-out in Germany caused the Red-Green coalition to pass up a chance to accelerate the process by which Russian weapons plutonium could be converted into MOX fuel. As a consequence, at least a decade has been lost in the attempts to look for final disposition of Russian nuclear weapons plutonium.

A similar thing happened in 2003 when the Chinese government was interested in acquiring the still idle Hanau facility from Siemens. Again, the government insisted that according to the Foreign Trade and Payments Act it saw no possibility to reject a formal request for an export – provided such a request was actually filed. On the other hand, forces within the Red-Green coalition and among the NGOs supporting the coalition were active in discrediting the motives of the Chinese government. NGOs such as Greenpeace and the IPPNW were in the forefront arguing that the Chinese government was mainly interested in the MOX facility in order to be able to process plutonium for military purposes. This line of argumentation was quite strange, since China as a nuclear weapons state is already in possession of technology to separate plutonium and is not dependent upon acquiring a German civilian plutonium technology. Such a technology could rather be of interest for a state having no experience with plutonium processing technology, but this was not the case with China. It could rather be argued that the Chinese interest in the MOX facility was signaling that China was looking at plutonium resulting from its civilian and its military programs not as material for future nuclear weapons but rather as a source of civilian energy. Hence, delivering this facility might have helped to encourage a process within China by which the civilian use of nuclear energy would take precedence over the military use. However, under conditions of the emotional, heated and very ideological debate in Germany – which is almost completely dominated by anti-nuclear groups – there was no chance for any kind of differentiation of that kind.

The result was foreseeable: the longer the benign intentions of the Chinese government were being put into question as part of a public debate, the more the Chinese government became anxious about losing its face. In April 2004 the Chinese government announced that it was no longer interested in acquiring the Hanau facility, with no further explanations given.

#### ***4. Another Sonderweg, another damage done?***

German nuclear export policy has been characterized by a certain tendency for a Sonderweg for more than four decades. However, the nature and the thrust of the respective Sonderwege have changed fundamentally. In the 1960s and 1970s, the German Sonderweg aimed at keeping open as many civilian nuclear options as possible and to resist U.S. non-proliferation efforts as much as possible. Today, the German Sonderweg is characterized by the radical phasing out of nuclear energy and the resultant attempts to convince others to follow. In the 1970s, only few states and neighbors were ready to follow the German example (Vorbild), the same can be said today.

The German nuclear Sonderweg in the 1970s and 1980s provoked huge damage to international nuclear non-proliferation efforts: it directly and indirectly contributed to the acquisition of nuclear weapons by South Africa, Pakistan, North Korea and also of Iran. Today's Sonderweg poses fewer problems in terms of traditional nuclear non-proliferation concerns. German companies – or better to say: companies who still think it is worth producing in Germany – have limited leeway to produce and sell nuclear technologies of sensitive character. Most nuclear companies today operate outside Germany, which is tantamount to a loss of government control. These developments show how detrimental a national policy can be that is being pursued with an ideological zeal: it eventually leads to a decrease in governmental control and to a loss of jobs in Germany. With regard to the Hanau facility, this zeal has rather done damage to international non-proliferation efforts. The safety and security of nuclear weapons material in Russia and the final disposition of plutonium is the most important non-proliferation

challenge today. With its policy of “benign neglect” towards this issue the Red-Green coalition has prolonged the duration of the process by which the nuclear weapons material of the former Soviet Union can be put to final and safe disposition by at least ten years. It can only be hoped that the consequences of this new German Sonderweg will not be as disastrous as the consequences of the first Sonderweg.

The German decision to phase out nuclear energy might be wise in the long run, under conditions of a growing liberalized international market for electricity with nuclear energy states participating in it. A rich country such as Germany can at least afford such a step. As Germans somehow have the tendency to pursue new policies with a sense of thoroughness and zeal (always pointing to the principle character of what they are doing – Grundsatzfrage), there is, however, the danger that missionary and ideological aspects could prevail. As a consequence, a certain loss of reality might take place as well as consequences not intended by the proponents of the new thinking but detrimental in various aspects.

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<sup>1</sup> Text of the agreement can be found in *Europa-Archiv*, Vol. 30, No. 18 (1975), pp. D. 485; see William W. Lowrance: „Nuclear Futures for Sale: To Brazil from West Germany,“ *International Security*, Vol. 1, No. 2 (Fall 1976), pp. 147-166; Norman Gall: „Atoms for Brazil, Dangerous for All,“ *Foreign Policy*, No. 23 (Summer 1976), pp. 155-201; Edward Wonder: „Nuclear Commerce and Nuclear Proliferation: Germany and Brazil, 1975,“ *Orbis*, vol. 21, No. 2 (Summer 1977), pp. 277-306; Lothar Wilker: „Das Brasilien-Geschäft - ein diplomatischer Betriebsunfall?,“ in: Helga Haftendorn, Wolf-Dieter Karl, Joachim Krause and Lothar Wilker (eds.): *Verwaltete Außenpolitik - Sicherheits- und entspannungspolitische Entscheidungsprozesse in Bonn* (Cologne: Wissenschaft und Politik, 1978), pp. 191-208; Wolf Grabendorff: „Bedingungsfaktoren und Strukturen der Nuklearpolitik Brasiliens,“ in: Lothar Wilker (ed.): *Nuklearpolitik im Zielkonflikt - Verbreitung der Kernenergie zwischen nationalem Interesse und internationaler Kontrolle* (Cologne: Wissenschaft und Politik, 1980), pp. 47-76.

<sup>2</sup> Michael Brenner: *Nuclear Power and Non-Proliferation: The Remaking of US-Policy* (Cambridge/London/New York, 1981); Nuclear Energy Policy Study Group (Spurgeon M. Keeny, jr. Chaiman), Sponsored by the Ford-Foundation, administered by the MITRE Corporation: *Report on: Nuclear Power Issues and Choices* (Cambridge, Mass., 1977); U. S. Office of Technology Assessment (OTA): *Nuclear Proliferation and Safeguards* (New York and London, 1977); Ted Greenwood, Harold A. Feiveson und Theodore B. Taylor: *Nuclear Proliferation. Motivations, Capabilities, and Strategies for Control* (New York, 1977); Robert M. Lawrence and Joel Larus: *Nuclear Proliferation Phase II* (Lawrence, Ka., 1974); Albert Wohlstetter: „Spreading the Bomb Without Quite Breaking the Rules,“ *Foreign Policy*, No. 25 (1976), pp. 88-96 and No. 26 (1977), pp. 145-179.

<sup>3</sup> Nuclear Nonproliferation Act of 1978, Public Law 95-242.

<sup>4</sup> See Joachim Krause: „Multilateral Cooperation in the Face of New and Old Security Challenges“, in: *Asia and Europe. Global Governance as a Challenge to Cooperation*. Edited by William Wallace and Young Soogil (Washington, D.C.: The Brookings Institution Press und Tokyo: Council for Asia Europe Cooperation 2004) pp. 58-91.

<sup>5</sup> Karl Kaiser and Beate Lindemann (eds.): *Kernenergie und Internationale Politik* (Munich, 1975) and Helga Haftendorn: „Die Nuklearpolitik der Vereinigten Staaten zwischen Autonomie und Interdependenz,“ in: Lothar Wilker (ed.): *Nuklearpolitik im Zielkonflikt*, pp. 13-45.

<sup>6</sup> In 1970 already Waldemar Besson had registered that with regard to the negotiations over the NPT the Federal Republic of Germany had shown a remarkable profile, see Waldemar Besson: *Die Außenpolitik der Bundesrepublik Deutschland* (Munich, 1970), p. 394.

<sup>7</sup> See Karl Kaiser: „Auf der Suche nach einer Welt-Nuklearordnung: Zum Hintergrund deutsch-amerikanischer Divergenzen,“ *Europa-Archiv*, Vol.33, No. 6 (April 1978), pp. 153-172.

<sup>8</sup> In the memoirs of Helmut Schmidt there is not a single note of self-criticism.

<sup>9</sup> See Tania Malheiros: *Brasiliens geheime Bombe: Das brasilianische Atomprogramm* (Frankfurt a. M., 1995); Sabine Gans: „Die brasilianischen Nuklear- und Raketenprogramme,“ *Europäische Sicherheit*, Vol. 43. No. 8 (1994), pp. 405-406.

<sup>10</sup> Alexander Kelle: „Germany“ in: *Nuclear Exports in Europe*, edited by Harald Mueller (Brussels, 1995), pp. 77-105.

<sup>11</sup> This is the view shared by the majority of experts in the field of energy supply (not necessarily shared by the current Federal Minister of Ecology Jürgen Trittin); see the interview with former Economics Minister Werner Müller in *Handelsblatt* from 28 February 2005; see also Mark Hibbs, „Top cabinet phase-out architect says German policy will be reversed“ *Nucleonics Week*, Vol. 46, No. 9, March 3, 2005, pp. 1 and 9 – 10.

<sup>12</sup> See Daniel Hamilton and Joseph P. Quinlan: *Partners in Prosperity: The Changing Geography of the Transatlantic Economy* (Washington, D.C. 2004), who have come to the conclusion that in the transatlantic economy foreign affiliate sales count much more than normal exports.

<sup>13</sup> *Tageszeitung (TAZ)* from 21 December 2000 („Müller mit Atommacht“).

<sup>14</sup> See Paragraph 6 of the Energy and Gas Provision Act (Energiewirtschaftsgesetz), in particular subparagraph 3.

<sup>15</sup> Former Minister of Economics Werner Müller did already in 2000 admit that such a move might be difficult to implement; see the interview with Mueller in the weekly *Die ZEIT*, 29 June 2000.

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<sup>16</sup> Akbar Etemad: „Iran“ in: *A European Non-Proliferation Policy. Prospects and Problems*, edited by Harald Mueller (Oxford, 1987). pp. 203-228.

<sup>17</sup> See Robert J. Einhorn and Gary Samore: „Ending Russia’s Assistance to Iran’s Nuclear Bomb“ *Survival*, Vol. 44, No. 2 (Summer 2002), pp. 51-70.

<sup>18</sup> Harald Mueller: *Nukleare Krisen und transatlantischer Dissens. Amerikanische und europäische Antworten auf aktuelle Probleme der Weiterverbreitung von Kernwaffen* (Frankfurt: Frankfurt Peace Research Institute HSFK Report 9/2003), p. 7.

<sup>19</sup> Agreement between the Government of the United States of America and the Government of the Russian Federation concerning the management and disposition of plutonium designated as no longer required for defense purposes and related cooperation;

<http://twilight.saic.com.md/DOCS/podispagree.pdf>.

<sup>20</sup> Joachim Krause: „The Plutonium Hot Potato and the Red-Green Coalition“ *Internationale Politik – Transatlantic Edition*, Vol. 2, No. 1 (Spring 2001), pp. 22-28.

<sup>21</sup> Agreement between the Government of the Federal Republic of Germany, the Government of the Republic of France and the Government of the Russian Federation on Cooperation in the Area of the Use of Plutonium Resulting from the Dismantling of Russian Nuclear Weapons for Peaceful Purposes from June, 2, 1998..

<sup>22</sup> National Academy of Sciences: *Management and Disposition of Excess Weapons Plutonium* (Washington D.C., 1994).

<sup>23</sup> *Tagesspiegel*, September 2, 2000.