

**STRATEGIC ENVIRONMENTAL ASSESSMENT REPORT FOR THE POLISH NUCLEAR  
PROGRAMME**

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## 8 LIST OF FOOTNOTES

Below, all the footnotes in this document are given. At the same time, this is a synthetic description of data sources and literature used to prepare the report. This manner of presentation is most appropriate due to significant volume of the document.

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<sup>1</sup> Example: "Rządzie, więcej energii" [Government, give us more energy], Gazeta Wyborcza, 2008, URL: <http://wyborcza.pl/1,75248,5090397.html> (accessed on: 10 December 2010).

<sup>2</sup> IAEA GS-G-2.1 Arrangements for preparedness for emergencies Pub1265\_web.pdf

IAEA GS-G-4.1 Format and content of NPP SAR Pub1185\_web.pdf

IAEA INSAG 10 Defence in depth Pub1013.pdf

IAEA NS-G-1.13 Radiation protection aspects of NPP design Pub1233\_web.pdf

IAEA NS-G-1.2 Safety assessment for NPPs Pub1112\_scr.pdf

IAEA NS-G-1.8 Design of Emergency Power Systems Pub1188\_web.pdf

IAEA NS-G-3.3 Evaluation of seismic hazards Pub1144\_web.pdf

IAEA NS-R-1 Safety of NPPs -design.pdf

IAEA NS-R-3b Site evaluation for NPP Pub1177\_web.pdf

IAEA Proc 2003 Safety of transport of radioactive materials Pub1200\_web.pdf

IAEA SF-1 Fundamental Safety Principles Pub1273\_web.pdf

IAEA Standards status with Internet addresses.pdf

IAEA TS-R-1 Regulations for safe transport Pub1225\_web.pdf

IAEA WS-G-3.1 Remediation process Pub1282\_web.pdf

IAEA Safety Standards Series: Review and Assessment of Nuclear Facilities by the Regulatory Body Safety Guide No. GS-G-1.2

<sup>3</sup> WENRA List\_of\_reference\_levels\_January\_2007.pdf

WENRA RHWG Harmonization Report.pdf

WENRA waste and spent fuel storage 2005.pdf

WENRA WGWD Report on Decomm Safety Ref Levels.pdf

<sup>4</sup> "Oceny oddziaływania na środowisko planów i programów. Praktyczny poradnik prawny" [Assessments of environmental impact of plans and programs], Jerzy Jendrośka, Magdalena Bar, Centrum Prawa Ekologicznego, Wrocław 2010.

<sup>5</sup> (European Commission: Integrated Pollution Prevention and Control (IPCC). Reference Document on the Application of Best Available Techniques to Industrial Cooling Systems. December 2001. Ministry of Environment. Warsaw, January 2004.

<sup>6</sup> UU Nuclear Regulatory Commission, US NRC Policy Statement on Nuclear Power Plant Safety Goals, Atomic Energy Clearing House, 32(26); (23 June 1986).

<sup>7</sup> Critical population group – the most exposed group, e.g. in the case of the population living in the vicinity of a nuclear power plant it is usually infants or children 2-7 years old who live in the area around the plant.

<sup>8</sup> UNSCEAR Report 2000: Sources and Effects of Ionizing Radiation.

<sup>9</sup> Strupczewski A. Oddziaływanie małych dawek promieniowania na zdrowie człowieka [Impact of small radiation doses on human health], Biuletyn Miesięczny, June 2005, p. 10-25.

<sup>10</sup> Insights into the control of the release of iodine, strontium and other fission products in the containment by severe accident management, NEA/CSNI/R(2000)9.

<sup>11</sup> SPAIN, Convention on Nuclear Safety, Third National Report, September 2004.

<sup>12</sup> FRANCE 3<sup>rd</sup> French National Report on Implementation of the obligations of the Convention on Nuclear Safety issued for the 2005 Peer Review Meeting, July 2004.

<sup>13</sup> UK-EPR Fundamental Safety Overview Volume 1: Head Document Chapter G: Environmental Impact Sub-Chapter G.3 .

<sup>14</sup> UK AP1000 Safety, Security, and Environmental Report, 11. Radioactive Waste Management

<sup>15</sup> ESBWR Design Control Document/Tier 2 26A6642BJ Rev. 03.

<sup>16</sup> ANSI/ANS, "American National Standard Radioactive Source Term for Normal Operation of Light Water Reactors," ANSI/ANS-18.1-1999.

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- <sup>17</sup> General Electric Company, “Technical Derivation of BWR 1971 Design Basis Radioactive Material Source Terms,” NEDO-10871, March 1973.
- <sup>18</sup> ANSI/ANS, “American National Standard Radioactive Source Term for Normal Operation of Light Water Reactors,” ANSI/ANS-18.1-1999.
- <sup>19</sup> Wielkości emisji są większe niż dopuszczalne wg zaostrzonych przepisów francuskich dla nowych reaktorów, ale stężenia są od 100 do 1000 razy mniejsze niż dopuszczalne stężenia graniczne wg 10CFR20.
- <sup>20</sup> US NUCLEAR REGULATORY COMMISSION, US NRC Policy Statement on Nuclear Power Plant Safety Goals, Atomic Energy Clearing House, 32(26); (23 June 1986).
- <sup>21</sup> European Utility Requirements for LWR Nuclear power Plants, Volume 1 &2, Rev. C April 2001.
- <sup>22</sup> Government Decree (733/2008) on the Safety of Nuclear Power Plants Issued in Helsinki on 27 November 2008, <http://www.finlex.fi/fi/laki/kaannokset/2008/en20080733.pdf>.
- <sup>23</sup> RADIATION AND NUCLEAR SAFETY AUTHORITY (STUK): Statement Issued by the Radiation and Nuclear Safety Authority Concerning the Construction of the Olkiluoto Nuclear Power Plant Unit 3, Annex 1 21.1.2005 Safety Assessment of the Olkiluoto 3 Nuclear Power Plant Unit for the Issuance of Construction License.
- <sup>24</sup> This scenario is alternative, equivalent, but formulated differently. At the time of writing of this document (5 December 2010), the decision on the final formulation of this requirement had not been made.
- <sup>25</sup> Design Conditions, Design Objectives, and other terms corresponding to the special definitions given in the EUR requirements are spelled with capital letters (the same as in the EUR) so as to highlight their special nature conformant to the EUR definitions.
- <sup>26</sup> European Utility Requirements For LWR Nuclear Power Plants 2.1.B. Appendix B: Verification process of the EUR environmental impact targets.
- <sup>27</sup> The hazards occurring after accidents are connected with the release of five isotopes of iodine, whereby the radiological hazards caused by each of them is different. For simplicity’s sake, the hazards caused by the isotopes are translated into the equivalent for iodine I-131. Hence the term “equivalent I-131 radiological hazard.”
- <sup>28</sup> UK AP1000 Safety, Security, and Environmental Report, 15. Accident Analyses SSER 15.6-1 Revision 1 15.6 Decrease in Reactor Coolant Inventory.
- <sup>29</sup> US NRC RG 1.183 Alternative Radiological Source Terms For Evaluating Design Basis Accidents At Nuclear Power Reactors, July 2000.
- <sup>30</sup> NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants", 1998.
- <sup>31</sup> UK AP1000 Safety, Security, and Environmental Report, 15. Accident Analyses SSER 15A-1 Revision 1 Appendix 15a, Evaluation Models And Parameters For Analysis Of Radiological Consequences Of Accidents
- <sup>32</sup> Subsection 5.5.2, Item (3) of ANSI/ANS-58.14-1993.
- <sup>33</sup> 26A6642BP Rev. 03, ESBWR Design Control Document/Tier 2, 15.4.47.
- <sup>34</sup> Analysis of compliance of the Standard EPR vs. EUR: the main findings P. Berbey *EUR project manager* Warsaw, April 27 2010.
- <sup>35</sup> 45. Fission-Product Source Terms UK AP1000 Probabilistic Risk Assessment.
- <sup>36</sup> ESBWR Design Control Document/Tier 2 , 26A6642BP Rev. 03, 15.4-32 Table 15.4-5.
- <sup>37</sup> Webster, P., Risk Assessments in Canada Proc. of Conf. on Recent Developments in Probabilistic Safety Assessments in Nuclear Safety, London, (11/12 December 1996).
- <sup>38</sup> UNIPEDE, “Report for NUCLESUR on a comparison of safety issues”, Consensus on Safety Issues Working Group CSWIG 1, (September 1987).
- <sup>39</sup> OECD CSNI, “Consideration of quantitative safety guidelines in member countries”, Committee on the Safety of Nuclear Installations, OECD Nuclear Energy Agency, CSNI Report No 177, Paris, (October 1990).
- <sup>40</sup> OPB-88 “General Provisions for Ensuring Safety of Nuclear Power Plants”, PNAE G-1-011-89, USSR GAEN (1989).
- <sup>41</sup> Gosatomnadzor RF “Criteria for siting the nuclear power station”, PNAE-G-03-33-93, Moscow (1996).
- <sup>42</sup> NRB-96, “Radiation Safety Norms”, Russian Federation Ministry of Health, Moscow, (1996).



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- <sup>43</sup> Hammar L. "Swedish Regulatory Views on Advanced Concepts in Reactor Safety", in: Proc. of Intern. Seminar on New Generation of Nuclear Power Plants, Warsaw, Poland, (25-27 Sept. 1996).
- <sup>44</sup> OECD CSNI, "Consideration of quantitative safety guidelines in member countries", Committee on the Safety of Nuclear Installations, OECD Nuclear Energy Agency, CSNI Report No 177, Paris, (October 1990).
- <sup>45</sup> HEALTH AND SAFETY EXECUTIVE, "The Tolerability of Risk from Nuclear Power Plants", HM NII Her Majesty's Stationary Office, London, (1992).
- <sup>46</sup> Lewis, M.J. et al., "Societal risk: a UK utility's view for future reactors", Proc. of ANF'92, Tokyo, (1992).
- <sup>47</sup> US NUCLEAR REGULATORY COMMISSION, US NRC Policy Statement on Nuclear Power Plant Safety Goals, Atomic Energy Clearing House, 32(26); (23 June 1986).
- <sup>48</sup> ACRS, Implementation of the Safety Goal Policy, Nuclear Safety, Vol. 33, No. 4, (October- December 1992), 629-631.
- <sup>49</sup> BERBEY, P., et al. "EUR - an European Utility Requirements Document for Future LWR Power Stations", in: Proc. of the 4-th Intern. Topical Meeting on Nuclear Thermal Hydraulics, Operations and Safety, Taipei, Taiwan, (April 6-8, 1994).
- <sup>50</sup> WNA: Decommissioning nuclear facilities (updated October 2010). <http://www.world-nuclear.org/info/inf19.html>.
- <sup>51</sup> <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/decommissioning.pdf>.
- <sup>52</sup> Scientific American.
- <sup>53</sup> Decommissioning Maine Yankee, Scientific American.
- <sup>54</sup> Maine Yankee Community Advisory Panel on Decommissioning <http://www.maineyankee.com/public/cap%20final.pdf>.
- <sup>55</sup> OECD/NEA Decommissioning of Nuclear Power Plants – Policies, Strategies and Costs (2003).
- <sup>56</sup> US NRC Inspection Reports for Maine Yankee from August 1998 through January 2003 (IR 98-04 – 03-03) ([www.nrc.gov](http://www.nrc.gov)).
- <sup>57</sup> Wald M. Dismantling Nuclear Reactors, Scientific American, March 2003, 33-41.
- <sup>58</sup> IAEA Financial aspects of decommissioning, IAEA-TECDOC-1476, November 2005.
- <sup>59</sup> UK EPR Fundamental Safety Overview Volume 2: Design And Safety Chapter T: Decommissioning And Dismantling Contents Chapter: T.
- <sup>60</sup> Regulatory Guide 1.4., "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss-of-Coolant Accident for Pressurized Water Reactors, [www.nrc.gov/reading-rm/doc.../reg-guides/power.../01-029.pdf](http://www.nrc.gov/reading-rm/doc.../reg-guides/power.../01-029.pdf).
- <sup>61</sup> Nuclear Regulatory Commission (NRC) Regulatory Guideline 1.145, Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants (NRG-RG-1.145, NRC 1982).
- <sup>62</sup> Celiński Z., Strupczewski A. Podstawy energetyki jądrowej [Basic tenets of the nuclear energy engineering], WNT, Warsaw, 1984.
- <sup>63</sup> J. F. Sagendorf, "A Program for Evaluating Atmospheric Dispersion From a Nuclear Power Station," NOAA Tech Memo ERL-ARL-42, 1974.
- <sup>64</sup> US NRC RG 1.111. Methods for estimating atmospheric transport and dispersion of gaseous effluents in routine releases from light water reactors.
- <sup>65</sup> NRC Regulatory Guide 1.111, Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors (NRC-RG-1.111, NRC 1977).
- <sup>66</sup> Fransioli P.: Calculations of Acute and Chronic "Chi/Q" Dispersion Estimates for a Surface Release, TDR-MGR-MM-000001, Rev 00, December 17, 1999.
- <sup>67</sup> -RODOS RA2 TN03-01, 2003.
- <sup>68</sup> Good Practice Guide for Atmospheric Dispersion Modelling.
- <sup>69</sup> USNRC, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants," Regulatory Guide 1.145, Revision 1, November 1982.
- <sup>70</sup> J. Guin et al.: Site Boundary Considerations For New Nuclear – Darlington, [http://www.ceaa.gc.ca/050/documents\\_staticpost/cearef\\_29525/0105/ai-sb.pdf](http://www.ceaa.gc.ca/050/documents_staticpost/cearef_29525/0105/ai-sb.pdf)

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- <sup>71</sup> UKEPR-0003-110 – Issue 02, pre-construction environmental report chapter 11: radiological impact assessment.
- <sup>72</sup> When calculating the daily dose from radiation emitted by a nuclear power plant, the assumed period of 50 years does not cause significant change in the results compared with a 60-year period of operation.
- <sup>73</sup> The location factor is the ratio of the dose rate measured indoors to the dose rate measured outdoors.
- <sup>74</sup> The  $1/r^2$  can also be used. Using  $1/r$  provides a larger safety margin.
- <sup>75</sup> ESBWR – UK Preliminary Safety Report Step 2 Sections 1.0 – 2.
- <sup>76</sup> Arrêté du 20 novembre 2009 portant homologation de la décision no 2009-DC-0153 de l’Autorité de sûreté nucléaire du 18 août 2009 relative aux niveaux d’intervention en situation d’urgence radiologique, 18 décembre 2009 Journal Officiel De La République Française Texte 38 sur 127.
- <sup>77</sup> Fundamental Safety Overview Volume 2: Design And Safety Chapter P: Reference Operating Condition Studies (Pcc), Sub-chapter P.3, p. 11.
- <sup>78</sup> AP1000 European Design Control Document, Ch. 2. Site Characteristics, 2009.
- <sup>79</sup> AP1000 European Design Control Document EPS-GW-GL-700 15.6-15 Revision 0 Accident Analyses Ch. 15.6.
- <sup>80</sup> 10 CFR Part 50.34.
- <sup>81</sup> AP1000 European. 15. Accident Analyses Design Control Document, 15.1.5.4.6 Doses.
- <sup>82</sup> TEDE is an acronym for Total Effective Dose Equivalent which is normally used in documents prepared in the USA. It is a counterpart of the term “effective dose”. According to US regulations, TEDE is a sum of the *committed effective dose equivalent (CEDE)* and the *deep dose equivalent (DDE)*. When calculating the two components, one must take into account all the radionuclides, including derivatives from decay of the parent radionuclides, if they make a significant contribution to the dose and the value of the released radioactivity.
- <sup>83</sup> ESBWR Design Control Document/Tier 2, 26A6642BP Revision 3 February 2007 Chapter 15 Safety analysis Part 2.
- <sup>84</sup> Regulation of the Council of Ministers of 27 April 2004 on the values of the intervention levels for the different types of intervention measures and the criteria for appeal against such measures (Journals of Laws no. 98, item 987).
- <sup>85</sup> UK AP1000 Safety, Security, and Environmental Report, 15. Accident Analyses, 15.1.5.4.6 Doses.
- <sup>86</sup> LPZ – an area that is defined in US regulations but that does not exist as a separate zone in the regulations of most countries of the European Union. A close counterpart of this area is a 3 km zone around a nuclear power plant where, in the event of a severe accident, such intervention measures as administration of stable iodine may be implemented.
- <sup>87</sup> U.S. EPR Final Safety Analysis Report, Tier 2 Revision 1 Ch 15.1, page 2.1-7  
[http://adamswebsearch2.nrc.gov/idmws/DocContent.dll?library=PU\\_ADAMS^pbntad01&LogonID=53e7d43f23702c77d75094c5d2cde4ec&id=092460394](http://adamswebsearch2.nrc.gov/idmws/DocContent.dll?library=PU_ADAMS^pbntad01&LogonID=53e7d43f23702c77d75094c5d2cde4ec&id=092460394).
- <sup>88</sup> TEDE is an acronym for Total Effective Dose Equivalent which is normally used in documents prepared in the USA. It is a counterpart of the term “effective dose”. According to US regulations, TEDE is a sum of the *committed effective dose equivalent (CEDE)* and the *deep dose equivalent (DDE)*. When calculating the two components, one must take into account all the radionuclides, including derivatives from decay of the parent radionuclides, if they make a significant contribution to the dose and the value of the released radioactivity.
- <sup>89</sup> Doehnert M. Project of AP1000 power reactor, Intern. Symp. Nuclear Power for Poland, Warsaw 2006.
- <sup>90</sup> General Electric Hitachi : The ESBWR Plant General Description .
- <sup>91</sup> As of 5 December 2010.
- <sup>92</sup> UK EPR Fundamental Safety Overview Volume 3: Environmental Impact Chapter D: Potential Environmental And Health Effects Chapter D Section: D.7.3.2.
- <sup>93</sup> CM – Carte Marine – seachart, 0 m CM is the water level at the lowest low tide level which, in the case of Flamanville, is equal to 4.92 m.

<sup>94</sup> Sievert is a unit used in radiation protection, equal to a dose absorbed by a human body, taking into account its biological effectiveness. In the nuclear sector, doses a thousand times smaller, i.e. mSv, are of interest.

<sup>95</sup> Państwowa Agencja Atomistyki: Działalność Prezesa Państwowej Agencji Atomistyki oraz ocena stanu bezpieczeństwa jądrowego i ochrony radiologicznej w Polsce w 2009 roku. [National Atomic Energy Agency: Activity of the President of the National Atomic Energy Agency and evaluation of the status of nuclear safety and radiological protection in Poland in 2009], Warsaw, June 2010.

<sup>96</sup> IAEA Sustainability of Nuclear Power, Vienna, 1997.

<sup>97</sup> Hormesis is any physiological effect occurring at small doses that cannot be anticipated by extrapolating the toxic effects caused by large doses. Hormetic effects are usually beneficial. They characterize processes where small doses of agents that are harmful if taken in large doses stimulate the defensive mechanisms of an organism (the Greek word *hormáein* means to set in motion, impel, urge on).

<sup>98</sup> Low level Radiation Health Effects, RSH Compiling the Data, III Edition, March 2002, Chapter 1.3.2 Lower-order Animals.

<sup>99</sup> Planel, H., Bru, A., Soleilhavoup, J.P. and Tixador, R. (1967) Effect of very low ionizing radiations on the multiplication of *Paramecium aurelia*, C. R. Hebd.. Seances Acad. Sci. Ser. Sci. Natur., 264: 2945-2948.

<sup>100</sup> Karam PA, Leslie SA Calculations of background beta-gamma radiation dose through geologic time. Health Phys. 1999 Dec;77(6):662-7. <http://www.ncbi.nlm.nih.gov/pubmed/10568545>.

<sup>101</sup> UNSCEAR, "Sources and effects of ionizing radiation", Report to the General Assembly, UN, New-York, (1994).

<sup>102</sup> Frigerio, N.A., Stowe, R.S., "Carcinogenic and genetic hazards from background radiation", in: Proc. of a Symp. on Biological Effects of Low-Level Radiation Pertinent to Protection of Man and His Environment, (Chicago 3-7 Nov. 1975), IAEA, Vienna (1976).

<sup>103</sup> Hickey, R.J. et al. Low level ionizing radiation and human mortality: multi-regional epidemiological studies, Health Physics, Vol. 40, (May 1981) 625-641.

<sup>104</sup> Cohen, B.L. (1995) Test of the linear-no threshold theory of radiation carcinogenesis for inhaled radon decay products. Health Phys. 68, 157-174.

<sup>105</sup> According to the pessimistic LNT model, which claims that every dose is harmful, the value calculated using the factor assumed by the ICRP is  $1.0 \times 10^{-3}$  Sv/year  $\times$  70 years  $\times$  0.05 deaths/person-sV  $\times$  100,000 persons = 350 additional deaths.

<sup>106</sup> Greenland, S, Robins, J., Accepting the limits of ecologic studies, Am. J. of Epidemiology, vol 139, No 8. (April 15, 1994) 769-771, oraz Greenland, S, Robins, J., Ecologic studies – biases, misconceptions, and counterexamples, Am. J. of Epidemiology, Vol. 139, No 8. (1994) 747-760.

<sup>107</sup> Stidley, C.A., Samet, J.M., A review of ecologic studies of lung cancer and indoor radon, Health Physics, Vol. 65 No 3, (Sept. 1993) 234-251.

<sup>108</sup> Lubin J H.: The potential for bias in Cohen's ecological analysis of lung cancer and residential radon *J.Radiol. Prot.* **22** 141–8, 2002.

<sup>109</sup> Cohen B. L.: Response to 'The potential for bias in Cohen's ecological analysis of lung cancer and residential radon' *J. Radiol. Prot.* **22** (2002) 305–307, oraz COHEN, B.L. (1994) Invited commentary: in defense of ecologic studies for testing a linear-no threshold theory. *American Journal of Epidemiology* **139**, 765-71. oraz COHEN, B.L., Answer to Drs Greenland and Robins, *Am. J. of Epidemiology*, Vol. 139, No. 8, 761 (April 15, 1994) I COHEN, B.L. (1997b) Problems in the radon vs. lung cancer test of the linear no-threshold theory and a procedure for resolving them., *Health Phys.* **72**.

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- <sup>162</sup> EPR: from 12 to 22 months; AP 1000: 18 months; ABWR/ESBWR: 18 to 24 months.
- <sup>163</sup> Np.-137; Am-241,242m,243; Cm-243,244,245.
- <sup>164</sup> I-129, Tc-99, Sn-126, Cs-135, Zr-93 i Se-79.
- <sup>165</sup> Neutron irradiation causes radiation embrittlement of steel, and specifically increase in the temperature of passing to brittle state (*nil-ductility transition temperature – NDT*).
- <sup>166</sup> Unpressurized water reactors, excess reactivity is compensated by adding to primary circulation water neutron-absorbing boron (B10) in form of boric acid H<sub>3</sub>BO<sub>3</sub>.
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- <sup>193</sup> Laudyn D., Pawlik M. and Strzelczyk F.: Elektrownie [Power Plants]. WNT. Warsaw 2007.
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- <sup>196</sup> Ministry of Economy. Government Representative for Polish Nuclear Industry. Polish Nuclear Programme (draft). Warsaw, 16 August 2010.
- <sup>197</sup> Sometimes, it is necessary to locate intake and discharge of cooling water (building a drain adit) in the distance of 4-8 km from the sea shore (information given by the representative of Westinghouse Electric Company LLC, Mr Robert Pearce).
- <sup>198</sup> Regulatory Frameworks and Issues on Site Selection and Site Evaluation for Korean NPPs Hyunwoo Lee (KINS, South Korea). CNRA International Workshop on “New Reactor Siting, Licensing and Construction Experience”. Prague, 15-17.09.2010.
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- <sup>201</sup> Kozioł J., Stechman A.: Przemysłowa woda chłodząca. [Industrial cooling water] Wydawnictwo Politechniki Śląskiej. Gliwice 2007.
- <sup>202</sup> Harlan Bengtson: Steam Power Plant Condenser Cooling 4: Hybrid Wet and Dry Cooling. March 11, 2010. <http://www.brighthub.com/engineering/mechanical/articles/66087.aspx>.
- <sup>203</sup> [BAT, Table 3.3], although other reports quote water consumption smaller only by 30%.
- <sup>204</sup> NEI: Water Use and Nuclear Power Plants. <http://www.nei.org/keyissues/protectingtheenvironment/factsheets/water-use-and-nuclear-power-plants-page4>.
- <sup>205</sup> UniStar Calvert Cliffs Nuclear Power Plant Units 3 and 4 Cooling System Selection and Site Layout Study. Bechtel Power Corporation. March 2006.

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- <sup>206</sup> George Vanderheyden: Nuclear – A Clean Energy Future. UniStar Nuclear Energy. May 2010.
- <sup>207</sup> Water demand of hybrid cooling towers may be even 4 times lower in comparison to wet natural draught cooling towers [BAT, Table 3.3].
- <sup>208</sup> Environment protection and electromagnetic compatibility. Protection of soil, forests and water. [http://kwnae.ee.pw.edu.pl/w\\_osike/04.pdf](http://kwnae.ee.pw.edu.pl/w_osike/04.pdf).
- <sup>209</sup> Westinghouse: UK AP1000 Environmental Report. UKP-GW-GL-790. (Sec. 4.2.3.3).
- <sup>210</sup> Net electrical power as in Temelin power plant 1 & 2 (also with closed cooling cycle with wet cooling towers).
- <sup>211</sup> Widomski A. : „Warta” nuclear power plant in Klempicz. Nuclear power engineering. Questions, myths and facts. Part 1. National Atomic Energy Agency. Warsaw 1989.
- <sup>212</sup> District Starosty in Bełchatów: Bełchatów District Development Strategy. Bełchatów – 2001.
- <sup>213</sup> The given value of irreversible loss is rather high compared to mean annual values for „Warta” power plant - 1.44%  $Q_w$ , and estimated in this study - 1.21%  $Q_w$ . Perhaps it is the value of maximum loss in summer (this study estimates it at 1.61%  $Q_w$ ). Water consumption per discharged thermal power index = 0.39  $m^3/s/1000 MW_t$  is close to the one estimated in this study (0.43  $m^3/s/1000 MW_t$ ).
- <sup>214</sup> Especially if large conventional thermal power stations are built in the meantime, and such are currently planned on lower Wisła (near Grudziądz and Opaleń).
- <sup>215</sup> With 2 units of any type, cooling water demand is lower.
- <sup>216</sup> Local water resources seem insufficient without water from the river Warta.
- <sup>217</sup> Local water resources seem insufficient without water from Lake Miedwie (also applies to Lisowo and Wiechowo sites).
- <sup>218</sup> It was assumed that during normal operation of a power unit 300 persons are on the premises, the number increases to ca. 1000 during fuel reloading and current overhaul downtime, and to 1300 during medium overhaul downtime (every 10 years).
- <sup>219</sup> Intake was executed from 8 deep water wells of total capacity 240  $m^3/h = 0.067 m^3/s$ .
- <sup>220</sup> Ordinance of Minister of Environment of 24 July 2006 on conditions of introduction of sewage to water or soil and on particularly harmful substances for aquatic environment (Journal of Laws No. 137 of 2006, item 984) - §18.1.
- <sup>221</sup> Water law act of 18 July 2001 (Journal of Laws No. 115 of 2001, item 1229, as amended) – art. 39, excerpt 2, point 3.
- <sup>222</sup> Ordinance of Council of Ministers of 14 October 2008 on environmental fees (Journal of Laws No. 196 of 2008, item 1217) - §4, point 1-3.
- <sup>223</sup> Announcement of Minister of Environment of 4 October 2010 on environmental fee rates for the year 2011 (M. P. No. 74 of 2010, item 945) – Annex No. 2, Table C.
- <sup>224</sup> If we disregard outdated analyses performed for the purpose of designing the "old" Żarnowiec power plant: 4 units with WWER-440/W-213 reactors, each with gross capacity 465 MWe, open-cycle cooling system.
- <sup>225</sup> UK EPR. Pre-Construction Environmental Report. Chapter 12: Non-radiological Impact Assessment.
- <sup>226</sup> UK AP1000 Environment Report. UKP-GW-GL-790, Revision 3.
- <sup>227</sup> UNIPEDE / EURELECTRIC: BAT for Cooling Systems. Working Group “Environmental Protection”. January 1999.
- <sup>228</sup> For instance: In North Sea and English Channel in order to eliminate sea clams, chlorination is performed 7 months a year with concentration from 0.5 to 1.0 mg/l. residual oxidizer concentration on the system outlet is 0.1-0.2 mg/l.
- <sup>229</sup> Semi-constant or pulsatory dosing with low concentration is used in Canada against zebra mussels and in France and the Netherlands to reduce number of sea clams in power plants.
- <sup>230</sup> Total residual oxidizers (TRO).
- <sup>231</sup> Vanderheyden, M.D., Schuyler, G.D.: Evaluation and quantification of the impact of cooling tower emissions on indoor air quality. ASHRAE Transactions of Annual Meeting, Vol. 100, Part 2 (pp. 612-620).



- <sup>232</sup> Integrated Pollution Prevention and Control (IPPC). Environmental Assessment and Appraisal of BAT. Horizontal Guidance Note IPPC H1. Environment Agency. Environment and Heritage Service. SEPA (Scottish Environment Protection Agency). [http://www.ni-environment.gov.uk/ippc\\_h1.pdf](http://www.ni-environment.gov.uk/ippc_h1.pdf).
- <sup>233</sup> Marhienke T., Krewitt W., Neubarth J., Friedrich R., Voß A., Ganzheitliche Bilanzierung der Energie- und Stoffströme von Energieversorgungstechniken. Forschungsbericht. Universität Stuttgart. Institut für Energiewirtschaft und Rationelle Energieanwendung. Stuttgart 2000.
- <sup>234</sup> Commission staff working document accompanying the communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions. Second strategic energy review. An EU energy security and solidarity action plan. Energy Sources, Production Costs and Performance of Technologies for Power Generation, Heating and Transport. {COM(2008) 744}
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- <sup>236</sup> Response of junior secretary in Ministry of Environment - pp. Prime Minister - to a query no. 11997 on Polish obligations in terms of emission of sulphur dioxide and nitrogen oxides
- <sup>237</sup> Fuel and Power Demand Forecast by 2030
- <sup>238</sup> Polish Power Industry Policy by 2030
- <sup>239</sup> Development Plan in terms of covering current and future power demand for the years 2010-2025. Extract. Konstancin – Jeziorna, March 2010. Polskie Sieci Elektroenergetyczne S.A.
- <sup>240</sup> Ostaszewska K., 2002, Geography of landscape. Selected methodological issues. Wyd. nauk. PWN, Warsaw
- <sup>241</sup> Kalesnik S., 1979, Podstawy geografii fizycznej {Basics of physical geography}, PWN, Warsaw
- <sup>242</sup> Journal of Laws of 30 April 2004 No. 92 item 880
- <sup>243</sup> Natural and landscape complexes are fragments of natural and cultural landscape under protection due to their visual or aesthetic values.
- <sup>244</sup> Sources of photographs: <http://ziemianarozdrozu.pl> ; <http://www.kleszczow.pl> ; <http://www.freefoto.com> ; <http://www.oregonlive.com> ; <http://www.greenpeace.org.uk> ; <http://www.theenergycollective.com>
- <sup>245</sup> Attitude of local communities in European countries towards locations of nuclear power plants in their neighbourhood, Senate Office, Warsaw 2009
- <sup>246</sup> Ranking of the richest municipalities in the country published in the weekly local government newspaper "Wspólnota"
- <sup>247</sup> What specific advantages will municipality and powiat (and to a lesser extent, province) residents obtain from a nuclear power plant?, [www.atom.edu.pl](http://www.atom.edu.pl)
- <sup>248</sup> [www.kleszczow.pl](http://www.kleszczow.pl)
- <sup>249</sup> [www.mg.gov.pl](http://www.mg.gov.pl)
- <sup>250</sup> Thywissen K., 2006. Components of Risk. A Comparative Glossary. SOURCE, Publication Series of UNU-EHS (United Nations University – Institute for Environment and Human Security) 2
- <sup>251</sup> Punzet J., 1998–1999. Występowanie katastrofalnych wezbrań w karpackiej części dorzecza Wisły [Occurrence of catastrophic floods in Carpathian section of the Vistula river basin]. Folia Geographica, Seria Geographica-Physica 29/30
- <sup>252</sup> Magnuszewski A., Soczyńska U. (ed.), 2001. Międzynarodowy słownik hydrologiczny [International Dictionary of Hydrology]. Wyd. Naukowe PWN, Warsaw.
- <sup>253</sup> Pytkowska M., 2007. Dyrektywa 2007/60/WE Parlamentu Europejskiego i Rady z 23 października 2007 r. w sprawie oceny ryzyka powodziowego i zarządzania nim. [Directive 2007/60/WE of the European Parliament and the Council of 23 October 2007 on assessment and management of flood risk] Woda. Kwartalnik Regionalnych Zarządów Gospodarki Wodnej oraz Krajowego Zarządu Gospodarki Wodnej 13, Gospodarka Wodna 3
- <sup>254</sup> Definition according to Act on protection of agricultural and forest land of 3 February 1995 (Journal of Laws 1995 No. 16, item 78 as amended). As a rule it is assumed that inviolable flow, depending on a river, is 0.5 - 1.5 SNQ, i.e. medium among lowest annual water flows in a river in perennium

<sup>255</sup> M. Bednarska, M. Kiejzik-Głowińska, A. Tyszecki, Problemy wykonywania raportów o oddziaływaniu na środowisko inwestycji drogowych w odniesieniu do obszarów Natura 2000 [Problems of making reports of environmental impact of road investments with respect to Natura 2000 areas], „Problemy Ocen Środowiskowych” 2005, no. 3, p. 34.

<sup>256</sup> Zarządzanie obszarami Natura 2000. Postanowienia art. 6 dyrektywy “siedliskowej” 92/43/EWG, Polish version of the study Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, s. 43, available at [http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision\\_of\\_art6\\_pl.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_pl.pdf) in the version WWF Polska 2007 [15.07.2008].

<sup>257</sup> The only attempt at definitional approach to public interest is contained in the Act on Spatial Planning and Development (Journal of Laws of 2004 No. 80, item 717, as amended), which in art. 2 p. 4 contains the statutory definition of public interest, according to which it should be construed as "generalized target of goals and measures, taking into account the objectified needs of the general public or local communities, associated with land development". Without going into details, on the example of this definition one may indicate a fundamental problem of determining the content of the concept of "public interest", namely the definition of the indeterminate concept by other vague concepts (objectified needs), and the contradiction of various public interests of different social groups, and individual interests, whose sum is not yet public interest.

<sup>258</sup> Overview of interpretations of the notion of public interests see W. Jakimowicz, Wykładnia w prawie administracyjnym [Interpretation in administrative law], Zakamycze, Kraków 2006, p. 84 et seq., A. S. Duda, Interes prawny w polskim prawie administracyjnym [Legal interest in Polish administrative law], C.H. Beck, Warszawa 2008, p. 19 et seq. and R. Sowiński, Interes publiczny – dobro wspólne [Public interest - the common good]. Universal values as categories shaping the notion of administration, [in:] The right to good administration. Materials from the Congress of Departments of Law and Administrative Procedure, Warszawa-Dębe 23-25 September 2002, Wyd. WNT, Warsaw 2003.

<sup>259</sup> Regional Administrative Court Judgement of 4 August 2005. III SA/Wa 646/05. LEX no. 19088.

<sup>260</sup> K 23/98, OTK 1999, No. 2, item 25.

<sup>261</sup> M. Wyrzykowski, Pojęcie interesu społecznego w prawie administracyjnym [The concept of public interest in administrative law], Wyd. UW, Warsaw 1986, p. 45.

<sup>262</sup> Journal of Laws 1997 No. 78, item 483 with corrigendum.

<sup>263</sup> M. Zbyb, Interes publiczny w orzecznictwie Trybunału Konstytucyjnego [Public interest in the jurisprudence of the Constitutional Court], [in:] Pojęcie interesu [The concept of interest], p. 68.

<sup>264</sup> M. Stefaniuk, Interes państwa i jego odpowiedniki w orzecznictwie polskiego Trybunału Konstytucyjnego [Interest of the state and its counterparts in the Polish Constitutional Court case law], [in:] Pojęcie interesu [The concept of interest], p. 238.

<sup>265</sup> Journal of Laws 2006 No. 89, item 348 as amended.

<sup>266</sup> G. Kaliszuk, Bezpieczeństwo Energetyczne Polski [Polish Energy Security], „Stosunki międzynarodowe”, 03.01.2010, <http://www.stosunki.pl/?q=content/bezpiecze%C5%84stwo-energetyczne-polski> [14.12.2010].

<sup>267</sup> Judgment of the Constitutional Court of 25 July 2006, File ref. P 24/05, OTK-A, 2006, No. 7, item 87,

<sup>268</sup> M. Wyrzykowski, Pojęcie interesu społecznego w prawie administracyjnym [The concept of public interest in administrative law], Wyd. UW, Warsaw 1986, p. 45.

<sup>269</sup> C. Kosikowski, *Polskie prawo gospodarcze publiczne* [Polish economic public law], Warsaw 2003, p. 245, K. Strzyżkowski, *Prawo gospodarcze publiczne* [Economic public law], Warsaw 2005, p. 26, M. Domagała, *Bezpieczeństwo energetyczne. Aspekty administracyjno-prawne* [Energy security. Administrative and legal aspects], Lublin 2008, p. 7 and 26.

<sup>270</sup> Compare: Management of Natura 2000 areas. Guidelines from 2007 on art. 6. 4 of Habitats Directive, concerning the concepts: alternative solutions, imperative requirements of overriding public interest, compensatory measures, overall coherence, the Commission's opinion - this is a revised version of Chapter 5 of the guidelines for Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC of 2000, available at

[http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance\\_art6\\_4\\_pl.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_pl.pdf), in the version WWF Polska [15.07.2008].

<sup>271</sup> The method of defining the concept of health and public safety in ECJ case law discussed [in:] *Stosowanie prawa Unii Europejskiej przez sądy* [Application of European Union law by the courts], A. Wróbel (ed.), Zakamycze, Kraków 2005, p. 248 et seq. The domestic law assumes that public safety and health protection issues will include projects involving flood protection and military infrastructure, and the activities of primary effect on the environment - such as building sewage treatment plants. Compare A. Kawicki, E. Forkiewicz, A. Jendrasiak, *Procedura wydawania decyzji o środowiskowych uwarunkowaniach. Komentarz ze wzorami dokumentów* [The procedure for issuing a decision on the environmental conditions. Commentary with document templates] volume 2, Muncypium SA, Warsaw 2007, p. 153.

<sup>272</sup> Case C 57/89 *European Commission v Federal Republic of Germany*, judgment of 28 February 1991, elaborated by: . Urban, *Opinie Komisji Europejskiej sprawie planów i przedsięwzięć negatywnie oddziałujących na obszary Natura 2000* [European Commission reviews of the plans and projects adversely affecting Natura 2000 areas], „*Problemy Ocen Środowiskowych*” 2006, no. 1 and idem, *Negatywne oddziaływanie planów i przedsięwzięć na sieć Natura 2000 a nadrzędny interes publiczny* [The negative impact of plans and projects on Natura 2000 network and overriding public interest]. Analysis of the concept of "imperative reasons arising from overriding public interest", [in:] *Wspólnotowe prawo ochrony środowiska i jego implementacja w Polsce trzy lata po akcesji* [Community environmental law and its implementation in Poland three years after accession], J. Jendrośka, M. Bar (ed.), CPE, Wrocław 2008, p. 149 et seq. And by Otawski, *Wdrażanie sieci Natura 2000 w Polsce – aspekty prawne* [Implementation of the Natura 2000 network in Poland - legal aspects], [in:] *Problemy prawa rolnego i ochrony środowiska* [Problems of agricultural law and environmental protection], Wyd. Forum Naukowe, Poznań 2004, p. 173.

<sup>273</sup> *Management of Natura 2000 areas. Guidelines from 2007.*

<sup>274</sup> S. Urban, *Opinie Komisji Europejskiej* [Opinions of the European Commission], p. 29.

<sup>275</sup> M. Kistowski, *Oceny oddziaływania na środowisko w obszarach Natura 2000 w warunkach polskich na tle doświadczeń Unii Europejskiej* [Environmental impact assessment in Natura 2000 areas in the Polish conditions against the background of experience of the European Union], „*Problemy Ocen Środowiskowych*” 2004, no. 1, p. 23.

<sup>276</sup> *Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Art. 6 (3) and (4) of the Habitats Directive 92/43/EEC*, European Commission, DG Environment, November 2001, WWF Poland Polish version 2005, p. 15 and the decision in case C 355/90 *European Commission v Spain*, judgment of 2 August 1993, ECR 1993 I-04221, and case C 44/95 *Regina versus Secretary of State for the Environment*, judgment of 11 July 1996 ECR 1996 I-03 805.

<sup>277</sup> Compare *Management of Natura 2000 areas. Guidelines from 2007 on art. 6. 4 of Habitats Directive*, concerning the concepts: alternative solutions, imperative requirements of overriding public interest, compensatory measures, overall coherence, the Commission's opinion - this is a revised version of Chapter 5 of the guidelines for Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC of 2000, available at [http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance\\_art6\\_4\\_pl.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_pl.pdf), in the version WWF Polska [15.07.2008].

<sup>278</sup> IV SA/Wa 2319/06, LEX no. 307447.

<sup>279</sup> *Polish Power Industry Policy by 2030*

<sup>280</sup> *Krajowy Ośrodek Badań i Dokumentacji Zabytków* [National Centre for Research and Documentation of Monuments]

<sup>281</sup> "Party of origin" means a Party or Parties to this Convention under whose jurisdiction a planned activity is to take place;

<sup>282</sup> "environmental impact assessment" means a national procedure for evaluating the likely impact of the planned activities on the environment;

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<sup>283</sup> competent authority" means the authority or public authority designated by a Party as responsible for the execution of the tasks defined in this Convention and/or the authority or authorities entrusted by the Board with making decisions concerning the planned activities;

<sup>284</sup> A summary of the EIA programme was translated into the language of each notified Party; this summary was intended for use by the public <http://www.unece.org/env/eia/pubs/factsheet5.html>

<sup>285</sup> Example: „Rządzie, więcej energii, Gazeta Wyborcza, 2008, URL: <http://wyborcza.pl/1,75248,5090397.html> (access date: 2010-12-10)

<sup>286</sup> <http://stop-odkrywce.pl>

<sup>287</sup> <http://www.trzcianka.info/elektrownia-atomowa-klempicz> (access date 2010-12-09)

<sup>288</sup> Only in industrial areas

<sup>289</sup> NIMBY syndrome occurs

<sup>290</sup> 69% respondents from Temelin area support the development nuclear power plant in their area. 90% of the population of Dukowany, where the nuclear power plant is located - Moravia - support continued operation.

<sup>291</sup> Most operating nuclear power plants are located in tourist zones, potentially, often with optimal conditions for the development of agriculture

<sup>292</sup> All national and local polls showed widespread support for nuclear power plants, as electricity producers

<sup>293</sup> The investor may not receive permission for such construction

<sup>294</sup> The planned Visaginas nuclear power plant will be located near the nuclear power plant in Igalina. Some respondents (4.5%) asked about the impact of new nuclear power plant on tourism said that it will be positive, the opposite view was held by a smaller proportion (2.5%) of respondents

<sup>295</sup> None of the nuclear power plants was built in areas of higher than average touristic or natural attractiveness. Rather, they were built in industrial or agricultural areas. There currently is a ban on construction of nuclear plants.

<sup>296</sup> Lubmin is a small port near the island of Rügen and Usedom. These are coastal, tourist areas. The nuclear power plant located there - the largest in the former East Germany - was closed in 1990

<sup>297</sup> The reply: "It is difficult to imagine today the construction of new nuclear power plants. Any attempt to argue for their construction would be received by the public as a provocation. The public debate now focuses on the possible extension of the reactors' operation time. In German public opinion, nuclear power stations are not associated with the image of a modern infrastructure. Modern forms of energy are - according to widespread belief among Germans - renewable energy, possibly efficient gas turbines, and most of all thinking about energy efficiency and smart energy consumption. On the other hand nuclear energy is seen as the energy of the past, which today can only act as transitional,

supporting the change to renewable energy - and nothing more. All political parties represented in the Bundestag, are in agreement in this respect"

<sup>298</sup> The two power stations, Jaslovskie Bohunice and Mochovce, were built in the 70s outside the areas of touristic significance

<sup>299</sup> Currently, there is a ban on construction

<sup>300</sup> In Sweden the issue of building safe nuclear power plants was from the old days (1968) put at the first place, therefore power plants could be located near population centers and it can be assumed that previously such a location in tourist areas was possible

<sup>301</sup> No polls on the location of nuclear power plants.

<sup>302</sup> A license was issued for a location in Akkuyu, in a naturally attractive area of Mediterranean bay

<sup>303</sup> Nuclear power plants were located far from population centers, in uninhabited areas. Only near the new built plants, settlements were constructed for newly arrived employees. In 2007 the government decided that new nuclear power plants will be built on the site of the old, closed plants.

<sup>304</sup> <http://www.tvn24.pl/-1,1581562,0,1,mama-gosiewska-przeciwko-energii-atomowej,wiadomosc.html> (access date: 2010-12-09)

<sup>305</sup> [http://www.atom.edu.pl/images/stories/atomowe/bezpieczenstwo/czarnobyl/zarzad\\_ptfm\\_oryginal\\_oswiadczenia\\_o\\_jaskowskim.pdf](http://www.atom.edu.pl/images/stories/atomowe/bezpieczenstwo/czarnobyl/zarzad_ptfm_oryginal_oswiadczenia_o_jaskowskim.pdf) (access date 2010-12-11)

- <sup>306</sup> Strupczewski A., 2009, Tańszy wiatr czy atom [Cheaper wind or atom], Sprawy Nauki. Miesięcznik publicystyczno-informacyjny, 18 May 2009, [http://www.sprawynauki.edu.pl/index.php?option=com\\_content&task=view&id=1344&Itemid=1](http://www.sprawynauki.edu.pl/index.php?option=com_content&task=view&id=1344&Itemid=1)
- <sup>307</sup> Jaworowski Z., 2006, Demony Czarnobyla [Demons of Chernobyl], Świat nauki, April 2006, [http://www.atom.edu.pl/images/stories/atomowe/publikacje/inne/demony\\_czarnobyla\\_swiat\\_nauki/demony\\_czarnobyla.pdf](http://www.atom.edu.pl/images/stories/atomowe/publikacje/inne/demony_czarnobyla_swiat_nauki/demony_czarnobyla.pdf)
- <sup>308</sup> Strupczewski A., 2010, Jak wykluczono niebezpieczeństwo awarii takiej jak w Czarnobylu w elektrowniach jądrowych III generacji [How hazard of failure similar to Chernobyl was excluded in third generation nuclear power plants], Presentation, PAP press conference, Warsaw, 22 April 2010, [http://www.atom.edu.pl/images/stories/atomowe/polemiki/konferencja\\_seren\\_czarnobyl\\_2010/jak\\_wykluczono\\_niebezpieczenstwo.pdf](http://www.atom.edu.pl/images/stories/atomowe/polemiki/konferencja_seren_czarnobyl_2010/jak_wykluczono_niebezpieczenstwo.pdf) (access date 2010-12-11)
- <sup>309</sup> <http://www.atom.edu.pl/>
- <sup>310</sup> [http://www.wwfpl.panda.org/o\\_nas/](http://www.wwfpl.panda.org/o_nas/) (access date: 2010-12-09)
- <sup>311</sup> [http://assets.wwfpl.panda.org/downloads/energia\\_jadrowa.pdf](http://assets.wwfpl.panda.org/downloads/energia_jadrowa.pdf) (access date: 2010-12-09)
- <sup>312</sup> [http://www.ian.org.pl/index.php?option=com\\_content&view=article&id=2&Itemid=2](http://www.ian.org.pl/index.php?option=com_content&view=article&id=2&Itemid=2) (access date: 2010-12-09)
- <sup>313</sup> Strupczewski A., 2010, Mity i fakty energetyki jądrowej czyli Czy budować elektrownie jądrowe w Polsce? [Myths and facts of nuclear energy or Do we build nuclear power plants in Poland?] (SEREN conference, Materials for journalists, PDF)
- <sup>314</sup> [http://www.ine-isd.org.pl/lang/pl/page/o\\_instytucie/id/1/](http://www.ine-isd.org.pl/lang/pl/page/o_instytucie/id/1/) (access date: 2010-12-09)
- <sup>315</sup> [http://www.ine-isd.org.pl/theme/UploadFiles/File/stanowiska\\_i\\_opinie/STANOWISKO\\_EJ.pdf](http://www.ine-isd.org.pl/theme/UploadFiles/File/stanowiska_i_opinie/STANOWISKO_EJ.pdf) (access date: 2010-12-09)
- <sup>316</sup> <http://koalicjaklimatyczna.org> (access date: 2010-12-10)
- <sup>317</sup> [http://www.koalicjaklimatyczna.org/lang/pl/page/stanowiska\\_koalicji/id/7/](http://www.koalicjaklimatyczna.org/lang/pl/page/stanowiska_koalicji/id/7/) (access date: 2010-12-10)
- <sup>318</sup> <http://www.greenpeace.org/poland/o-nas> (access date: 2010-12-10)
- <sup>319</sup> <http://www.greenpeace.org/raw/content/poland/press-centre/dokumenty-i-raporty/polityka-energetyczna-brief.pdf> (access date: 2010-12-10)
- <sup>320</sup> [http://www.ekolumna.org.pl/index.php?option=com\\_content&view=category&layout=blog&id=40&Itemid=53&lang=pl](http://www.ekolumna.org.pl/index.php?option=com_content&view=category&layout=blog&id=40&Itemid=53&lang=pl) (access date 2010-12-11)
- <sup>321</sup> [http://www.ian.org.pl/index.php?option=com\\_content&view=article&id=141&Itemid=20](http://www.ian.org.pl/index.php?option=com_content&view=article&id=141&Itemid=20) (access date: 2010-12-09)
- <sup>322</sup> <http://www.ian.org.pl/images/stories/pliki/petycja.pdf> (access date: 2010-12-10)
- <sup>323</sup> <http://www.zieloni2004.pl/art-3383.htm> - reprint from Gazeta Wyborcza (access date 2010-12-11)
- <sup>324</sup> [http://www.wiadomosci24.pl/artykul/warszawa\\_demonstracja\\_przeciwko\\_budowie\\_elekrowni\\_atomowych\\_135448.html](http://www.wiadomosci24.pl/artykul/warszawa_demonstracja_przeciwko_budowie_elekrowni_atomowych_135448.html) (access date 2010-12-11)
- <sup>325</sup> [http://trojmiasto.gazeta.pl/trojmiasto/1,35636,8167367,Atom\\_stop\\_\\_Protest\\_przeciwnikow\\_elekrowni\\_jadrowej.html](http://trojmiasto.gazeta.pl/trojmiasto/1,35636,8167367,Atom_stop__Protest_przeciwnikow_elekrowni_jadrowej.html) (access date 2010-12-11)
- <sup>326</sup> <http://www.washingtonpost.com/wp-dyn/content/article/2006/04/14/AR2006041401209.html> (access date 2010-11-2-09)
- <sup>327</sup> Whole Earth Catalog – published in 1968–1972 (and occasionally later, until 1998) catalogue with a list of products - clothes, books, tools, machines etc. - useful for self-sufficient way of life.
- <sup>328</sup> Gaia Theory– theory proclaiming that the Earth functions as one giant organism, adapted to the changes in order to maintain suitable conditions for life. Theory suggests that life on Earth will continue regardless of the actions of humans.
- <sup>329</sup> Friends of the Earth International (FoEI) – international environmental organization, having its headquarters in Amsterdam, bringing together more than 70 countries, approximately 1.5 million members and supporters

who carry out campaigns on the most important contemporary environmental and social problems, while working for the local and global sustainable development.

<sup>330</sup> U-turn for nuclear opponents, <http://www.world-nuclear-news.org/newsarticle.aspx?id=24707>

<sup>331</sup> [www.ian.org.pl](http://www.ian.org.pl) Official website of Inicjatywa AntyNuklearna

<sup>332</sup> Gerd Rosenkranz, Warsaw 2010, Myths of Nuclear Energy. How we are deceived by the energy lobby

<sup>333</sup> <http://www.atom.edu.pl/index.php/technologie/cykl-paliwow/wydobycie-uranu.html> (access date 2010.12.12)

<sup>334</sup> Jacek Kaniewski, Bezpieczeństwo dostaw paliwa dla elektrowni jądrowych w Unii Europejskiej [Secure supply of fuel for nuclear power plants in the European Union], Postępy Techniki Jądrowej no. 2 (51) 2008, National Atomic Energy Agency, Warsaw 2007,

<sup>335</sup> Gerd Rosenkranz, Warsaw 2010, Myths of Nuclear Energy. How we are deceived by the energy lobby

<sup>336</sup> <http://www.greenpeace.org/poland/co-robimy/klimat-i-energia/energia-atomowa/odpady-radioaktywne> (access on 12.12.2010 r.)

<sup>337</sup> A. Strupczewski, 2006, Czy mamy obawiać się odpadów radioaktywnych z elektrowni jądrowych [Should we worry about radioactive waste from nuclear power plants], Biuletyn Miesięcznika PSE, Cycle: „Nuclear energy”

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