



27 February 2015

Dr Jim Yong Kim  
President  
The World Bank  
1818 H Street, NW  
Washington, DC 20433  
USA

Dear Dr Kim,

### Consultation on the World Bank's Environmental and Social Framework

The World Nuclear Association (WNA) is the international organization that represents the global nuclear industry. Its role is to promote a wider understanding of nuclear energy by producing authoritative information, developing common industry positions and contributing to the energy debate. Our member organizations come from a range of countries – developed, developing and emerging economies – and cover the whole nuclear fuel cycle – from mining to waste disposal, and including nuclear power plant operations.<sup>1</sup>

We are responding to the Bank's consultation exercise on its Environmental and Social Framework initiated in July last year. In the accompanying document we present briefly the key facts about nuclear energy and the conditions under which the industry operates in relation to the draft framework. This exercise shows, in principle, that nuclear energy projects meet the Bank's environmental and social standards for sustainable development.

Furthermore, nuclear energy has a key role to play in meeting the World Bank's Vision for Sustainable Development, by providing energy that mitigates the impact of climate change on people and the environment. At least 80% of the world's electricity must be low-carbon by 2050 to keep the world within 2°C of warming, according to the IPCC.<sup>2</sup> This is a massive global challenge that requires the use of all available low-carbon energy technologies. Nuclear energy is recognized by the

<sup>1</sup> For a list of our members please see <http://www.world-nuclear.org/WNA/About-WNA/WNA-Membership/>

<sup>2</sup> See IPCC Summary Report for Policymakers [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_SPMcorr2.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_SPMcorr2.pdf)

IPCC as “an effective greenhouse gas mitigation option” with life cycle emissions “comparable to most renewables”.<sup>3</sup> According to the International Energy Agency the use of nuclear energy needs to “more than double” by 2050 if the world is to stay within 2°C of warming.<sup>4</sup> Nuclear energy is essential if we are to improve energy access and successfully tackle climate change. It should be expected to play a greater role in developing countries and emerging economies.

We believe the framework provides a solid basis for assessing the environmental and social impacts of a project the Bank is considering funding. We would however ask for clarity in how exactly the document relates to previous sustainability visions the Bank has issued (as for example set out in *Toward a Sustainable Energy Future for All: Directions for the World Bank Group’s Energy Sector*, which includes a note regarding nuclear energy) and whether these documents are now superseded. We are strongly supportive of the fact that in this framework projects appear to be considered on their individual environmental and social merits, with no obvious blanket exceptions. Such a vision needs to be applied consistently across the Bank’s areas of activity and lending.

We would be pleased to discuss these matters further and would appreciate any opportunity to assist the World Bank Group in its consideration of how nuclear energy projects can meet these environmental and social standards.

With best regards,



Agneta Rising  
Director General

---

<sup>3</sup> See IPCC working group III report on mitigation <http://www.ipcc.ch/ipccreports/tar/wg3/index.php?idp=128>

<sup>4</sup> See overview to the IEA’s Nuclear Energy Technology Roadmap  
<http://www.iea.org/publications/freepublications/publication/technology-roadmap-nuclear-energy-1.html>

## Comments by the World Nuclear Association on the World Bank Consultation on its Environmental and Social Framework

The Board of Executive Directors of the World Bank Group initiated a consultation exercise on its Environmental and Social Framework on 30 July 2014. The World Nuclear Association (WNA) has reviewed the documents released by the World Bank and offers its comments in this short note.

### *Vision for Sustainable Development*

WNA considers that nuclear energy offers countries an opportunity to meet their energy needs in an environmentally and socially sustainable manner that does not limit or close-off other income-generating opportunities for current or future generations (paragraph 2).<sup>5</sup> In particular we would highlight the following views regarding nuclear energy's role in a sustainable future.

- Nuclear energy is projected to grow globally and is essential for meeting the world's increasing need for affordable, clean energy as urbanization and industrialization progress.
- Nuclear energy is a cost-effective way of producing reliable low-carbon electricity on a large scale. Its use must be expanded considerably if the world is to prevent 2°C of warming (above pre-industrial times) and avoid the more damaging impacts of climate change.
- Nuclear plants help keep the air clean by preventing the emission of air pollution which can lead to adverse health effects. Nuclear energy has up to now averted 1.84 million air pollution related deaths and by 2050 may prevent an extra 7.04 million.<sup>6</sup>
- Nuclear energy contributes significantly to energy security. Uranium is abundant, supplied by many countries and can be stockpiled in large quantities relatively inexpensively. Furthermore, nuclear energy costs are relatively insensitive to fuel price movements.
- Nuclear energy facilities are economic growth engines for the regions and countries in which they are constructed – injecting significant funds into local economies.<sup>7</sup> They provide opportunities for a large number of workers across a diverse range of fields.<sup>8</sup>

---

<sup>5</sup> BP, 2012, *Statistical Review of World Energy*, <[http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical\\_review\\_of\\_world\\_energy\\_2013.pdf](http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical_review_of_world_energy_2013.pdf)>

<sup>6</sup> Kharechi and Hansen, 2013, Prevented Mortality and Greenhouse Gas Emissions from Historical and Projected Nuclear Power <http://pubs.giss.nasa.gov/abs/kh05000e.html>

<sup>7</sup> For new build see <http://www.thecmlink.com/wordpress/wp-content/uploads/2013/10/2012-June-Benfits-from-Infrastructure-Investment-A-Case-Study-in-Nuclear-Energy.pdf>. For operating plants see <http://www.nei.org/CorporateSite/media/filefolder/Policy/Papers/ExelonIllinoisEconomicBenefitsOctober2014.pdf?ext=.pdf>

- Nuclear plants are valuable long-term assets. Similar to many forms of renewable energy, the capital costs of new nuclear plants are high, but over 60 years of operation nuclear energy offers one of the most competitive low-carbon options. Costs of generation cover the whole lifecycle – from construction to decommissioning, and from mining to waste disposal.
- Many high profile environmentalists have come to support the technology as they have discovered more about it.<sup>9</sup> Many countries are considering new nuclear units as they confront choices on their energy future.<sup>10</sup>
- Nuclear technology extends beyond just energy and includes agriculture, medicine and industrial applications.<sup>11</sup> Establishing a successful nuclear sector is a mark of progress for any developing country. It is something for a country to aspire towards.

### *World Bank Environmental and Social Policy*

WNA is pleased that the World Bank proposes to use a Borrower's existing environmental and social framework in the assessment, development and implementation of projects (paragraph 23).

Regarding the matter of due diligence and the risks and impacts of nuclear projects, we would like to highlight the following special bodies and frameworks that exist to ensure responsibility, accountability and transparency across every facet of the nuclear industry.

- i. Nuclear energy is regulated comprehensively by independent national authorities in line with guidance issued by the International Atomic Energy Agency (IAEA). The licensing of nuclear power plants by the safety regulators provides assurance that the plant will be designed, sited, constructed and operated in accordance with stringent safety and environmental standards and best practice. Furthermore, the operators, developers and builders of nuclear power plants are required under their licensing terms to have an integrated management system to assure safety and quality. The standards to which they work can be expected to comply with the World Bank Group's Environmental, Health, and Safety Guidelines for good international industry practice in environmental management

---

<sup>8</sup> During operation the number of full-time staff will be around about 500 for a typical reactor but many other contractors will be periodically required. For a list of nuclear careers see NEI website (accessed Feb 2015), *What are Employers Looking For* <http://www.nei.org/Careers-Education/Careers-in-the-Nuclear-Industry/What-Are-Employers-Looking-For>

<sup>9</sup> See this letter from climate scientists to environmental organisations <http://edition.cnn.com/2013/11/03/world/nuclear-energy-climate-change-scientists-letter/>

<sup>10</sup> See for example this Joint Communiqué from 12 European governments from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/140109/final\\_EU\\_Nuclear\\_Energy\\_Communique\\_.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/140109/final_EU_Nuclear_Energy_Communique_.pdf)

<sup>11</sup> For reference see our website <http://www.world-nuclear.org/info/Non-Power-Nuclear-Applications/>

(including hazardous materials management), occupational health and safety, community health and safety, and construction and decommissioning.

- ii. The global nuclear industry has a strong commitment to safety culture, as firmly established in the World Association of Nuclear Operators (WANO), whose membership includes every nuclear operator around the world. WANO reinforces a high level of global nuclear safety through its peer reviews, technical support and information exchanges on safety-related operational events.<sup>12</sup>
- iii. The IAEA has a technical assistance program to help its member states in establishing the necessary regulatory infrastructure for countries embarking upon the development of nuclear energy.
- iv. Nuclear energy is also subject to an international regime to protect its materials and technology from misuse. Chief among these is the non-proliferation treaty, but it is backed up by IAEA safeguards and multilateral and bilateral agreements.
- v. The occupational health and safety of personnel at nuclear installations, uranium mines and transport facilities is similarly governed by an internationally accepted system of radiological protection through the International Commission on Radiological Protection (ICRP).
- vi. WNA members (which comprise most of the major companies of the front-end of the nuclear fuel cycle) have agreed and are implementing a uranium mining stewardship program for assessing health, safety, security and environmental performance at mines. This program is based on recognition of fundamental human rights, sound corporate governance and making contributions to the economic and social development of local communities. The program will be reviewed to take account of the Global Reporting Initiative and experience over the past three years.<sup>13</sup>

While it is undoubtedly the case that nuclear power plants may present a risk to neighbouring communities in the event of an accident, such incidents are very rare and even accounting for these

---

<sup>12</sup> See WANO principles <http://www.wano.info/en-gb/aboutus/ourmission>

<sup>13</sup> World Nuclear Association, 2012, *Sustaining Best Practices in Uranium Mining and Processing*, downloadable from <http://www.world-nuclear.org/WNA/Publications/WNA-Position-Statements/Best-Practice-in-Uranium-Mining/>

nuclear power has resulted in far fewer deaths than any other major form of electricity generation.<sup>14</sup> In fact, the radiological impacts of accidents have turned out to be far less than expected. According the United Nations Scientific Committee of the Effects of Atomic Radiation, “radiation exposure following the nuclear accident at Fukushima-Daiichi did not cause any immediate health effects. It is unlikely to be able to attribute any health effects in the future among the general public and the vast majority of workers”.<sup>15</sup> The accident led to global reviews of plant risks and, especially of the robustness of emergency response and incident management, which can be expected to lower both the likelihood and impacts of future accidents even further.

In general, WNA believes that a nuclear power project should qualify as a ‘Low Risk’ in terms of its environmental and social effects (paragraph 20). The design features of the technology as well as the steps a building consortium and licensed nuclear operator have to take in order to meet their legal and regulatory obligations should mean that these risks will be properly and comprehensively mitigated and managed.

The nuclear industry is also required to work to a high degree of transparency and disclosure and therefore WNA does not anticipate that a nuclear energy project would have any difficulty meeting the World Bank’s policy on access to information (paragraph 42). WNA’s Charter of Ethics commits its member organizations to transparency in principle and practice where there is a demonstrable public interest consistent with protecting commercially valuable knowledge.

### *Environmental and Social Standards*

WNA believes that any nuclear energy project can, if conducted in accordance with usual industry good practise, successfully qualify under all of the standards. A *prima facie* case for nuclear energy under the standards is presented.

#### **ESS1: Assessment and Management of Environmental and Social Risks and Impacts**

In most if not all countries, nuclear energy facilities will be submitted to an environmental impact assessment (EIA) before approval can be given for construction or any major change of status such as licence extension, major upgrade or decommissioning (ESS1 paragraph 2). Such assessments will usually mandatorily require an extensive public consultation process. In terms of environmental

---

<sup>14</sup> Paul Scherrer Institute, *Energie-Spiegel*, 20, June 2010 at  
[http://www.psi.ch/info/MediaBoard/Energiespiegel\\_20e.pdf](http://www.psi.ch/info/MediaBoard/Energiespiegel_20e.pdf)

<sup>15</sup> UN, May 2013, No Immediate Health Risks from Fukushima Nuclear Accident Says UN Expert Science Panel,  
<http://www.unis.unvienna.org/unis/en/pressrels/2013/unisinf475.html>

impacts it has to be noted that nuclear energy has a very small footprint, especially in terms of materials<sup>16</sup> and land requirements<sup>17</sup>.

WNA considers that the nuclear industry is well able to manage environmental and social risks and impacts throughout the life of a nuclear power plant project in a systematic manner, appropriate to the nature and scale of the project and its potential risks and impacts (ESS1 paragraph 3). Given the enormous contribution a nuclear power plant can make to providing energy with very low greenhouse gas emissions across the full lifecycle, the industry's proven capability in managing hazardous materials (including waste products and used nuclear fuel), and the high capability of its personnel, WNA believes that a nuclear power project will prove environmentally sound and sustainable (ESS1 paragraph 2).

### **ESS2 Labour and Working Conditions**

Nuclear energy is produced by organizations committed to a safety culture whose attributes must include a safety-conscious work environment where people are treated with dignity and respect. Personnel can raise concerns without fear of retribution and are encouraged to offer innovative ideas. Managers are required to communicate regularly.

### **ESS3 Resource Efficiency and Pollution Prevention**

Nuclear facilities are generally resource efficient (especially in regard to land usage as compared with other forms of energy production), pose little risk of pollution, and generates small volumes of hazardous and non-hazardous waste. Key to this is the extraordinary energy density of nuclear fuel. One uranium pellet the size of your finger tip produces as much energy as one tonne of coal. The waste from nuclear energy production stays trapped inside its fuel, rather than being released to the atmosphere or environment. Transport and disposition of this waste is thus a manageable logistical task. The volumes are such that it can be easily stored on the site of power production, or in an intermediate storage facility. Civil nuclear wastes have been managed without a significant environmental release for over six decades.

Over the long-term there is international scientific consensus on deep geological disposal of high-level radioactive wastes and the global industry is committed to the setting up of such repositories. No other energy technology goes to anywhere near such lengths in dealing with its toxic effluents.

---

<sup>16</sup> See <http://www.scientificamerican.com/article/renewable-energy-s-hidden-costs/>

<sup>17</sup> See note from Entergy [http://www.entropy-arkansas.com/content/news/docs/AR\\_Nuclear\\_One\\_Land\\_Use.pdf](http://www.entropy-arkansas.com/content/news/docs/AR_Nuclear_One_Land_Use.pdf)

Recycling of nuclear fuel can leads to even greater resource availability and even smaller volumes of long-lived radioactive waste.

The impacts of nuclear plants on the aquatic environment are similar in nature to other thermal energy projects and relate primarily to cooling. Aquatic impacts are largely determined by plant siting and therefore factored in to the EIA. They are also subject to ongoing regulatory monitoring and assessment.<sup>18</sup>

#### ESS4 Community Health and Safety

Nuclear energy is produced at facilities with robust security and strong traditions of local community engagement for both routine and non-routine communication. All nuclear power plant operators are required to keep detailed emergency response plans as part of their licence conditions.

#### ESS5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement

Nuclear facilities are often relatively remote from large centres of population. Land acquisition is undertaken in compliance with national law, and restrictions on land use are kept to the minimum necessary for the safety and security of the plant and its neighbours.

#### ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources

Nuclear facilities take a highly precautionary approach to actions that might impact the environment. Many plants engage in active environmental stewardship programs which provide habitats for local species.<sup>19</sup> As previously noted their land use and materials footprint are among the smallest of any electricity generating technology, and their resulting biodiversity impacts are known to be extremely low.<sup>20</sup>

---

<sup>18</sup> For further information on water the water impacts of nuclear facilities please refer to IAEA, 2012, *Efficient Water Management in Water Cooled Reactors* <http://www-pub.iaea.org/books/IAEABooks/8883/Efficient-Water-Management-in-Water-Cooled-Reactors>

<sup>19</sup> See for example NEI [http://www.nei.org/corporatesite/media/filefolder/environment-ecology\\_book\\_2003.pdf](http://www.nei.org/corporatesite/media/filefolder/environment-ecology_book_2003.pdf) (accessed online Feb 2015)

<sup>20</sup> Brook and Bradshaw, Key role for nuclear energy in global biodiversity conservation, 09 12 2014 <http://onlinelibrary.wiley.com/doi/10.1111/cobi.12433/full> (accessed online Feb 2015)

## ESS7 Indigenous Peoples

Nuclear projects would be required to respect human rights pursuant to the Universal Declaration of Human Rights.

## ESS10 Information Disclosure and Stakeholder Engagement

The regulatory process in most countries provide significant opportunity for stakeholder engagement and influence over operations – arguably more than for other any other electricity generating technology. In addition, the public's sensitivity to nuclear issues means that facilities are typically subjected to a high-level of scrutiny by the media and environmental groups. It is certainly in a facility's best long-term interests to undertake ongoing and pro-active engagement.

Nuclear energy facilities require substantial numbers of permanent workers who are drawn from, or take up residence in nearby areas. This can be contrasted to some other forms of energy production where a strong human presence in the hosting community is not required. With project lifespans in excess of 60 years, incoming staff will develop strong connections in local communities. This in turn increases local public awareness and education levels. It is not surprising therefore that support for nuclear energy among such local communities is stronger than elsewhere.<sup>21</sup> Nuclear plants owners and their staff are in general good citizens.

---

<sup>21</sup> See Bisconti Research, 2013 <http://www.nei.org/CorporateSite/media/filefolder/Backgrounders/Reports-Studies/MEMO-Plant-Neighbors-070113.pdf?ext=.pdf>