

## ENHANCING TRANSBOUNDARY CONSULTATION IN THE CONTEXT OF NUCLEAR POWER DEVELOPMENT IN SOUTHEAST ASIA

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### Abstract

Certain ASEAN Member States have plans and are taking steps to develop nuclear power capacity as part of their long-term energy planning. The risk of a nuclear accident with transboundary consequences is evidently of serious concern to neighbouring states. From the perspective of a potentially risk-exposed neighbour, the opportunity to engage in transboundary consultation to better understand the risk posed by such plans and raise any concerns will undoubtedly be a critical confidence-building measure. At present, ASEAN does not have a region-wide framework that provides for such transboundary consultation. This paper analyses the normative support for transboundary consultation (through the use of mechanisms such as environmental assessments) at the international level and at the ASEAN level within two specific contexts: (i) a state's national decision to embark on a nuclear power programme; and (ii) the siting of a nuclear power plant. It evaluates options to strengthen the overall normative basis at the ASEAN level that flow from this analysis, in light of challenges and opportunities facing ASEAN.

**KEYWORDS:** Transboundary consultation; transboundary harm; nuclear power; environmental assessment; ASEAN; international law

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## I. Background and objectives

### A. Potential risk of transboundary environmental harm within Southeast Asia

Within Southeast Asia, certain Member States of the Association of Southeast Asian Nations (ASEAN) have plans and are taking steps to develop nuclear power plants as part of their long-term energy planning (sometimes referred to as “front-runners”).<sup>1</sup> While some ASEAN Member States are taking steps towards the adoption of a national position for a nuclear power programme, to date, none have made the political decision to do so.<sup>2</sup> Given that nuclear power involves a complex and politically sensitive policy process, its prospects in this region have waxed and waned. Nonetheless, there are projections that nuclear power capacity may be a reality within Southeast Asia by 2040.<sup>3</sup> As ASEAN Member States grapple with their own national responses to the climate crisis and the need for a clean energy transition, it remains to be seen how many will actually turn to nuclear energy as part of their energy mix.

In light of the above, the risk of a nuclear accident with transboundary consequences is of serious concern to ASEAN Member States. In addition, there are also certain nuclear power plants that are located close to this region, for example, Chinese nuclear power plants located close to the border of Vietnam.<sup>4</sup> Although there has been a growing interest in Small Modular Reactors (SMRs) within the region, many uncertainties surround the commercial deployment of SMRs.<sup>5</sup> As such, the analysis in this paper is primarily based on traditional land-based nuclear power plants. However, it does offer initial observations about the position on SMRs, in the context of the current status of development and prospects of future commercial deployment.

From the perspective of a potentially risk-exposed neighbour, the opportunity to engage in transboundary consultation to better understand the risk posed by such plans and to share any concerns will undoubtedly be a critical confidence-building measure. This paper explores the potential for using mechanisms such as strategic environmental assessment (SEA) and environmental impact assessment (EIA) to facilitate consultation between neighbouring states within two specific contexts: (i) a state’s national decision to embark on a nuclear power programme (using SEAs); and (ii) the siting of a nuclear power plant (using EIAs). It also discusses other mechanisms that facilitate transboundary consultation such as safety assessments. Transboundary consultation as envisaged in this paper

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<sup>1</sup> For example, as of 29 July 2020, the Philippines, pursuant to a presidential executive order passed in July 2020, has constituted a nuclear energy programme inter-agency committee to conduct a study for the adoption of a national position on a nuclear energy programme.

<sup>2</sup> This refers to Phase 1 of the IAEA Milestones Approach where a state will analyse the implications of introducing nuclear power. At the end of this phase, a state will be in a position to make a knowledgeable commitment to a nuclear power programme or it may decide not to proceed. See Section II.

<sup>3</sup> Int’l Atomic Energy Agency [IAEA], *Energy, Electricity and Nuclear Power Estimates for the Period up to 2050*, 127, REFERENCE DATA SERIES NO. 1 (Aug. 2019), [https://www-pub.iaea.org/MTCD/Publications/PDF/19-00521\\_web.pdf](https://www-pub.iaea.org/MTCD/Publications/PDF/19-00521_web.pdf) (last visited Sept. 9, 2021).

<sup>4</sup> For example, the Fangchenggang nuclear power plant in Guangxi Province, China – some units of which are already in operation – is situated approximately 50 km away from Vietnam. *FANGCHENGGANG-1*, IAEA POWER REACTOR INFORMATION SYSTEM (2021), <https://pris.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=943> (last visited Sept. 9, 2021); *Fangchenggang Nuclear Power Plant, Guangxi, China*, POWER TECHNOLOGY (2021), <https://www.power-technology.com/projects/fangchenggang-nuclear-power-plant-guangxi/> (last visited Sept. 9, 2021).

<sup>5</sup> Tomoko Murakami & Venkatachalam Anbumozhi, *Global Situation of Small Modular Reactor Development and Deployment*, ECONOMIC RESEARCH INSTITUTE FOR ASEAN AND EAST ASIA [ERIA] RESEARCH PROJECT REPORT FY 2021 No. 07, xii (July 2021), <https://www.eria.org/uploads/media/Research-Project-Report/2021-07-Small-Modular-Reactor-/Global-Situation-Small-Modular-Reactor-Development-Deployment.pdf> (last visited Sept. 9, 2021).

focuses on government-to-government consultation. Elements of public participation are discussed in the context of EIAs and SEAs, where it is relevant and necessary to provide a more holistic view.

At present, ASEAN does not have a region-wide framework that provides for transboundary consultation, whether through EIAs, SEAs or otherwise. Outside the region however, there are regional and international frameworks that support consultation between neighbouring states through transboundary EIAs and SEAs. These include the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention),<sup>6</sup> and the Protocol on Strategic Environmental Assessment (Kyiv Protocol)<sup>7</sup> under the auspices of the United Nations Economic Commission for Europe (UNECE), whose major aim is to promote pan-European economic integration, sustainable development and economic prosperity.<sup>8</sup> Both multilateral environmental agreements are well known for the comprehensive procedures they provide for transboundary EIAs and SEAs in respect of certain prescribed activities including nuclear-related activities. The Kyiv Protocol is open for accession by all Member States of the United Nations and steps are also being taken so that the Espoo Convention can similarly be open for global accession.<sup>9</sup> See Sections III.B and IV.B for a discussion of the UNECE normative framework.

Specific to the nuclear context are treaties and other instruments under the auspices of the International Atomic Energy Agency (IAEA), the global intergovernmental forum for scientific and technical cooperation in the peaceful use of nuclear energy.<sup>10</sup> Approximately 90 per cent of the Member States of the United Nations are also members of the IAEA.<sup>11</sup> Insofar as the development of a state's nuclear power programme is concerned, the IAEA framework strongly advocates stakeholder involvement, including the involvement of neighbouring states where appropriate, throughout the nuclear power development process.<sup>12</sup> The IAEA framework contemplates that a state's national infrastructure (to support the development of its nuclear power programme) will provide for certain environmental (including EIAs and SEAs) and safety assessments, as part of the state's commitment to not only environmental protection, but also nuclear safety. This aspect of its framework, in

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<sup>6</sup> Convention on Environmental Impact Assessment (EIA) in a Transboundary Context, Feb. 25, 1991, 1989 U.N.T.S. 309 [hereinafter Espoo Convention].

<sup>7</sup> Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, May 21, 2003, 2865 U.N.T.S. 140 [hereinafter Kyiv Protocol].

<sup>8</sup> The UNECE is one of five regional commissions of the United Nations and its major aim is to promote pan-European economic integration, sustainable development and economic prosperity through policy dialogue, negotiation of international legal instruments and the development of regulations and norms. See *Objectives and Mandate*, UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE [UNECE], <https://unece.org/objectives-and-mandate> (last visited July 19, 2021).

<sup>9</sup> *UNECE Espoo Convention on Environmental Impact Assessment becomes a global instrument*, UNECE (Aug. 26, 2014), <https://unece.org/environment/press/unece-espoo-convention-environmental-impact-assessment-becomes-global-instrument> (last visited July 20, 2021). See also *infra* note 77.

<sup>10</sup> The IAEA is an independent international intergovernmental organisation that is fully autonomous, with its policies, programmes and budgets being determined by its two Policy-Making Organs. It enjoys a special status in the UN system. Its relationship with the UN is regulated by the Statute of the IAEA and a separate relationship agreement with the UN. From the beginning, it was given the mandate to work with its Member States and multiple partners worldwide to promote safe, secure and peaceful nuclear technologies. The objectives of the IAEA's dual mission – to promote and control the Atom – are defined in Article II of the IAEA Statute. "The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose." *History*, IAEA, <https://www.iaea.org/about/overview/history> (last visited July 21, 2021).

<sup>11</sup> Information current as of April 2021. 173 states out of the 193 member states of the United Nations are members of the IAEA; See IAEA, *The Members of the Agency*, IAEA Doc. INF/CIRC/2/Rev.86 (Apr. 30, 2021), <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1959/infcirc2r86.pdf> (last visited Nov. 9, 2021); *Growth in United Nations Membership*, UNITED NATIONS, <https://www.un.org/en/about-us/growth-in-un-membership> (last visited Nov. 22, 2021).

<sup>12</sup> IAEA, *Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities*, 3-4, IAEA Doc. No. STI/PUB/1520 (July 2011).

particular, provides the mechanisms for stakeholder involvement. See Sections III.C and IV.C for a discussion of the IAEA normative framework.

Aside from the UNECE and IAEA frameworks, it must not be forgotten that international law imposes obligations under customary international law that apply to all states and their activities. This includes what is known as the 'due diligence' obligation to prevent transboundary harm from hazardous activities which recognises that while states have the sovereign right to exploit their own resources, they also have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states. Where there is a risk of significant harm, customary international law obliges such states to conduct an EIA, notify and consult neighbouring states. See Sections III.A and IV.A for a discussion of customary international law obligations.

## **B. Objectives of paper**

With this context in mind, the overall aim of this paper is to identify ways to strengthen the normative basis for transboundary consultation on nuclear power development within Southeast Asia.

To this end, this paper seeks to answer the following questions:

- (i) At the international level, what is the normative basis for transboundary consultation related to a state's national decision to embark on a nuclear power programme and the siting of a nuclear power plant?
- (ii) Is there an independent normative basis at the ASEAN level?
- (iii) What can ASEAN do to strengthen the overall normative basis?

The paper begins by exploring the normative basis for transboundary consultation applicable to nuclear power development at the international level, focusing on the position under customary international law and the UNECE and IAEA normative frameworks. It will start by examining the normative support available in respect of siting, before turning to a state's national decision to embark on a nuclear power programme.

The paper then considers the ASEAN normative framework<sup>13</sup> with a view to determining if it provides an independent normative basis for transboundary consultation and if so, how it relates to the normative basis existing at the international level. It then evaluates different options to strengthen the overall normative basis at the ASEAN level, in light of challenges and opportunities facing ASEAN.

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<sup>13</sup> See Section VI.

## II. Context for transboundary consultation: the IAEA Milestones Approach

A decision to start a nuclear power programme is a major undertaking for any state. It requires substantial investment in time, human and financial resources,<sup>14</sup> and is based on a commitment to use nuclear power safely, securely and peacefully.<sup>15</sup> This commitment requires establishing a sustainable national infrastructure that provides governmental, legal, regulatory, managerial, technological, human resource, industrial and stakeholder support for the nuclear power programme throughout its life cycle.<sup>16</sup>

### A. Overview of the Milestones Approach

The IAEA has developed a phased programme management guide known as the IAEA Milestones Approach for states looking to embark on a nuclear power programme. The aim of the Milestones Approach is to help Member States understand the commitments and obligations associated with developing the infrastructure needed for a safe, secure and sustainable nuclear power programme.<sup>17</sup> It is within the context of the Milestones Approach that this paper identifies opportunities for transboundary consultation (discussed below).

The Milestones Approach is detailed in the 2015 IAEA Nuclear Energy Series publication on Milestones in the Development of a National Infrastructure for Nuclear Power (NG-G-3.1 (Rev. 1)).<sup>18</sup> The IAEA first published this document in 2007 in response to increasing interest among IAEA Member States to understand more fully, the commitments involved in introducing nuclear power into their energy mix.<sup>19</sup> This is not a legal document but the guidance it provides is based on the relevant international legal instruments, IAEA safety standards and guidelines, as well as the experience and good practices of states that have nuclear power plants in operation. For more details on the IAEA Normative Framework, see Section III.C below.

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<sup>14</sup> IAEA, *Milestones in the Development of a National Infrastructure for Nuclear Power*, 1, IAEA Doc. No. STI/PUB/1704 (July 2015).

<sup>15</sup> The demonstration of compliance with international legal instruments, internationally accepted nuclear safety standards, nuclear security guidelines and safeguards requirements is essential in establishing a responsible nuclear power programme.

<sup>16</sup> IAEA, *supra* note 14.

<sup>17</sup> The IAEA Milestones Approach has been adopted by Member States interested in or embarking on new nuclear power programmes, as well as the nuclear industry in general.

<sup>18</sup> IAEA, *supra* note 14.

<sup>19</sup> The IAEA first published a brochure entitled *Considerations to Launch a Nuclear Power Programme* that summarised the infrastructure issues associated with the introduction of nuclear power in 2007. The brochure was followed by the publication of the original 2007 edition of the Milestones in the Development of a National Infrastructure for Nuclear Power (IAEA Nuclear Energy Series No. NG-G-3.1), which provided a more detailed description of the infrastructure issues to be addressed during each of the three successive phases of the programme's development. See IAEA, *Annual Report 2007: 50 Years of Atoms for Peace*, 2, 17, IAEA Doc. GC(52)/9 (2007), [https://www.iaea.org/sites/default/files/publications/reports/2007/anrep2007\\_full.pdf](https://www.iaea.org/sites/default/files/publications/reports/2007/anrep2007_full.pdf) (last visited July 21, 2021). This was then subsequently revised with a new edition produced in 2015 to incorporate several developments since 2007. First, in 2009 the IAEA began offering Integrated Nuclear Infrastructure Review missions, based on the 'milestones framework', to states introducing or expanding nuclear power, and these have generated practical lessons that are incorporated in this revision. Second, since 2007 the IAEA has published more detailed advice on many of the 19 infrastructure issues summarised in this publication. Those publications incorporate developments after 2007, and the content of this revision harmonises those more detailed publications. Third, this revision takes into account lessons learned from the 2011 Fukushima Daiichi accident and the implementation of the IAEA Action Plan on Nuclear Safety. Fourth, the original publication was framed in the context of a competitive bidding process, assuming this would apply in most cases. However, other approaches are also being used, involving, for example, strategic partners, sole suppliers and direct negotiations through intergovernmental agreements. See IAEA, *supra* note 14, Foreword. The publication is currently undergoing its second revision, the draft of which is expected to be ready in 2022.

## NUCLEAR POWER INFRASTRUCTURE DEVELOPMENT

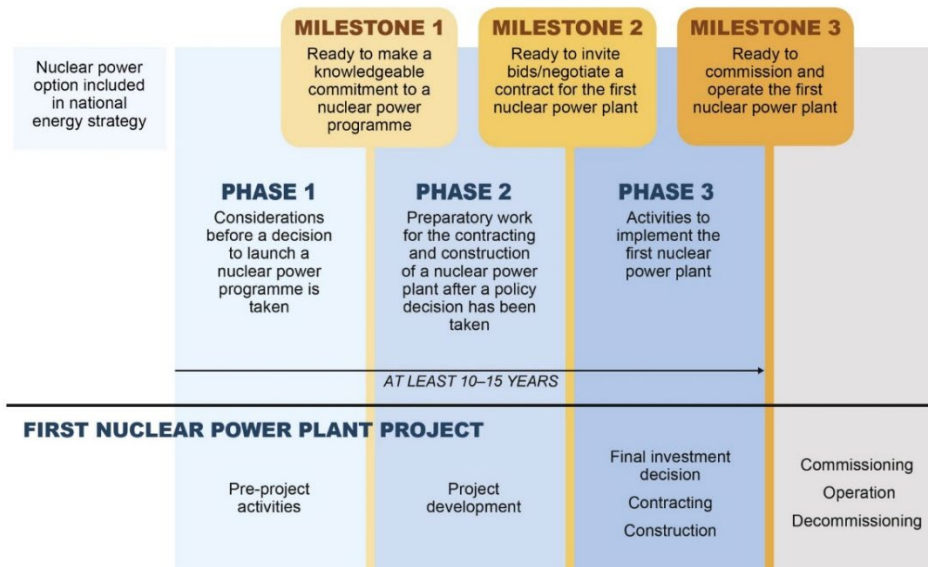


Figure 1: IAEA Milestones Approach. Source: IAEA<sup>20</sup>

The IAEA Milestones Approach has three distinct phases (Consider – Prepare – Construct), each leading to a specific milestone (Decide – Contract – Commission). See Figure 1 for an overview of the IAEA Milestones Approach. The IAEA Milestones Approach, through its phases and milestones, provides the relevant context within which to anticipate potential opportunities for transboundary consultation based on the IAEA normative framework as described above (see also Sections III.C and IV.C). The IAEA Milestones Approach identifies 19 infrastructure issues requiring specific actions during each of the three phases, the completion of which represents the achievement of the associated milestone.

### B. Context for transboundary consultation

In terms of potential opportunities for transboundary consultation in the context of a state’s national decision and siting of nuclear power plants, they are likely to arise during Phase 1 and 2 of the IAEA Milestones Approach. Specifically, in the case of a state preparing to make the national decision, preparatory steps would take place primarily during Phase 1 leading up to Milestone 1, when the state is deemed ready to make the commitment to a nuclear power programme and subsequently in Phase 2, as it makes the decision.

In the case of siting of a nuclear power plant, this could take place anytime during either Phase 1 or Phase 2. For example, even before a national decision is made, a state considering potential sites for a proposed nuclear power plant should begin a dialogue with neighbouring states as part of the site survey process during Phase 1.<sup>21</sup> After the national decision has been made, an EIA should be conducted in relation to the candidate/preferred sites for the proposed nuclear power plant as part

<sup>20</sup> *Milestones Approach*, IAEA, <https://www.iaea.org/topics/infrastructure-development/milestones-approach> (last visited July 21, 2021).

<sup>21</sup> IAEA, *supra* note 14, s. 3.12.1.

of the site selection process. This process should also entail consultations with neighbouring states where appropriate.<sup>22</sup>

Experience from IAEA Member States planning to embark on nuclear power programmes has shown that early attention to the 19 infrastructure issues set out in the Milestones Approach helps to facilitate a successful nuclear power programme.<sup>23</sup> One of the 19 infrastructure issues relates to stakeholder consultation.<sup>24</sup> Recognising that a lack of stakeholder support may jeopardise the success of a nuclear power programme, the Milestones Approach provides for stakeholder involvement throughout all phases of the Milestones Approach.<sup>25</sup> Within the context of this paper, it is important to note that the Milestones Approach recognises neighbouring states specifically as being relevant stakeholders.<sup>26</sup> Other infrastructure issues such as those relating to national position, nuclear safety, site and supporting facilities and environmental protection are of particular relevance to this paper as the guidance given by the Milestones Approach in respect of such issues provides support for consultation with neighbouring states.<sup>27</sup> These issues will be discussed as part of the IAEA normative framework applicable to EIAs and SEAs, as the case may be.

### C. Role of INIR missions and reports

The IAEA offers a variety of activities and services to support states that have made or are considering making the national decision to include nuclear power in their national energy mix. One such service is the IAEA Integrated Nuclear Infrastructure Review (INIR) mission, which states may choose to undertake.<sup>28</sup> The INIR missions help states to evaluate the state of their national nuclear infrastructure based on the 19 infrastructure issues discussed above, advising them on whether they have reached

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<sup>22</sup> *Id.*, ss. 3.3.2, 3.12.2, 3.13.2.

<sup>23</sup> On the contrary, insufficient attention to any of these issues may compromise safety or lead to costly delays or even project failure. *Id.*, 1.

<sup>24</sup> See *id.*, p. 7 and s. 3.11.

<sup>25</sup> See *id.*, ss. 3.11.1 (Phase 1 leading up to Milestone 1), 3.11.2 (Phase 2 leading up to Milestone 2), and 3.11.3 (Phase 3 leading up to Milestone 3).

<sup>26</sup> See *id.*, s. 3.11. This is also reflected in the IAEA Handbook on Nuclear Law, which states that: “stakeholders have typically included the following: the regulated industry or professionals; scientific bodies; governmental agencies (local, regional and national) whose responsibilities arguably cover, or ‘overlap’ nuclear energy; the media; the public (individuals, community groups and interest groups); and other States (especially neighbouring States that have entered into agreements providing for an exchange of information concerning possible trans-boundary impacts, or States involved in the export or import of certain technologies or material)” (emphasis added). See IAEA, *Handbook on Nuclear Law*, s. 1.5.3, IAEA Doc. No. STI/PUB/1160 (July 2003).

<sup>27</sup> Standards and guidelines in relation to each of the issues are as follows:

national position - IAEA, *Building a National Position for a New Nuclear Power Programme*, IAEA Doc. No. STI/PUB/1736 (June 2016) [hereinafter IAEA, *Building a National Position*]; nuclear safety - IAEA, *Establishing the Safety Infrastructure for a Nuclear Power Programme*, IAEA Doc. No. STI/PUB/1901 (July 2020) [hereinafter IAEA, *Establishing the Safety Infrastructure*]; site and supporting facilities - IAEA, *Site Survey and Site Selection for Nuclear Installations*, IAEA Doc. No. STI/PUB/1690 (July 2015); stakeholder involvement - IAEA, *supra* note 12; environmental protection - IAEA, *Managing Environmental Impact Assessment for Construction and Operation in New Nuclear Power Programmes*, IAEA Doc. No. STI/PUB/1625 (Apr. 2014) [hereinafter IAEA, *Managing EIA*]; IAEA, *Strategic Environmental Assessment for Nuclear Power Programmes: Guidelines*, IAEA Doc. No. STI/PUB/1815 (Nov. 2018) [hereinafter IAEA, *SEA Guidelines*].

<sup>28</sup> *Integrated Nuclear Infrastructure Review: An IAEA peer review service to assist Member States in the introduction or expansion of nuclear power programmes*, IAEA, 1 (June 2020), <https://www.iaea.org/sites/default/files/20/06/integrated-nuclear-infrastructure-review.pdf> (last visited Nov. 28, 2021).

the relevant milestones of the IAEA Milestones Approach.<sup>29</sup> Such missions do not function as a compliance monitoring mechanism, as they are non-binding and voluntary in nature.<sup>30</sup>

Upon the invitation of a Member State, an INIR mission is conducted by a team of IAEA and international experts who have experience in nuclear power programmes and infrastructure development. The host state is consulted on the selection of experts.<sup>31</sup> The INIR service includes three steps: (i) a request for the INIR service followed by the submission of the state's self-evaluation of the state of its national nuclear infrastructure; (ii) a pre-mission where the INIR team and the host state discuss the review process and agree on the terms of reference, the review team and the logistical arrangements for the INIR mission; and (iii) the main INIR mission, which consists mostly of interviews with representatives of all stakeholders involved in the development of the national nuclear power programme, based on the state's self-evaluation and supporting documents.

At the conclusion of the INIR mission, the findings are presented in a preliminary draft report, which would also include recommendations and suggestions of areas requiring additional work to reach the applicable milestone. It is possible that the findings may extend to deficiencies in the area of stakeholder involvement and transboundary consultation, with the draft report setting out recommendations and suggestions to remedy such deficiencies. Good practices, which may also benefit other embarking states, are also identified. The final report is delivered approximately three to four months after the mission and will be made publicly available, unless otherwise requested by the host state.<sup>32</sup> While actively encouraged by the IAEA to do so, the decision on whether to make such reports publicly available is ultimately left to the host state.<sup>33</sup> If a state so wishes, it may invite the IAEA to conduct a follow-up INIR mission that will be scheduled to assess the implementation of the recommendations and suggestions provided during the main mission.<sup>34</sup> The IAEA recommends that follow-up missions take place about 18 to 30 months after the main mission.<sup>35</sup> At this point, it should be noted that even if the follow-up missions reveal that the recommendations and suggestions provided during the main mission have not been effectively implemented, there is no enforcement mechanism to compel the state to do so given its voluntary and non-binding nature.<sup>36</sup>

### III. International normative basis - siting of a nuclear power plant

The siting of a nuclear plant refers to the process of selecting where a nuclear power plant should be built and the evaluation of whether the selected location is suitable for it. It is one of the crucial decisions in the early stages of a planned nuclear energy project that has potential impacts on costs,

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<sup>29</sup> The Evaluation of the Status of National Nuclear Infrastructure Development can be used as a basis for an integrated nuclear infrastructure review (INIR) mission or by a Member State itself, wishing to evaluate its progress (self-evaluation). IAEA, *Evaluation of the Status of National Nuclear Infrastructure Development*, 1-2, IAEA Doc. No. STI/PUB/1737 (Dec. 2016). In this regard, the INIR missions provide a way for the Member States to have in-depth discussions with international experts about experiences and best practices in nuclear power infrastructure development. *See also id.*, 4.

<sup>30</sup> *Review Missions and Advisory Services*, IAEA, <https://www.iaea.org/services/review-missions> (last visited July 19, 2021).

<sup>31</sup> *Integrated Nuclear Infrastructure Review*, *supra* note 28, 2.

<sup>32</sup> The IAEA will publish the INIR mission report 90 days after delivery to the Member State on its website, unless the state requests the IAEA in writing not to do so: IAEA, *Guidelines for Preparing and Conducting an Integrated Nuclear Infrastructure Review (INIR)*, 12, IAEA Doc. No. IAEA-SVS-34 (Sept. 2017); *Peer Review and Advisory Services Calendar*, IAEA, <https://www.iaea.org/services/review-missions/calendar?type=3159&year%5Bvalue%5D%5Byear%5D=&location=All&status=4275> (last visited July 19, 2021) for an update on how many missions have been conducted and the reports that are publicly available.

<sup>33</sup> Since INIR missions were first initiated in 2009, over 30 such missions have been conducted in 21 states, out of which 14 states have made the reports available online. *Integrated Nuclear Infrastructure Review (INIR)*, IAEA, <https://www.iaea.org/services/review-missions/integrated-nuclear-infrastructure-review-inir> (last visited Nov. 8, 2021).

<sup>34</sup> *Integrated Nuclear Infrastructure Review*, *supra* note 28, 4-5.

<sup>35</sup> *Id.*, 5

<sup>36</sup> *Review Missions and Advisory Services*, *supra* note 35.



public acceptance and the safety of the plant itself.<sup>37</sup> The issue of the site and supporting facilities is identified in the Milestones Approach as Infrastructure Issue 12.<sup>38</sup> Siting studies begin as early as in Phase 1 and continue through Phase 2 and with final confirmation of the site in Phase 3.<sup>39</sup>

As mentioned above, the site(s) selected could be in close proximity to the borders of neighbouring states or rely on interconnected aquatic environments for cooling water when the plant is built. As such, from the vantage point of a potentially affected neighbour, it is important for there to be transboundary consultation at this stage. In this regard, an EIA, a process to identify and assess all the environmental and socioeconomic impacts of the nuclear power plant and a mechanism for stakeholder involvement,<sup>40</sup> can serve as a platform for such transboundary consultation. Other mechanisms such as safety assessments conducted in respect of nuclear power plants (where safety impacts include a consideration of the impact of ionising radiation on the environment) can also serve to facilitate transboundary consultation. Depending on the law and/or policy of a state, an EIA and a safety assessment may sometimes be combined into one or conducted as separate processes.<sup>41</sup>

This section discusses the normative support for transboundary consultation in relation to the siting of a nuclear power plant under (i) customary international law; (ii) the UNECE Espoo Convention; and (iii) IAEA treaties and other relevant instruments.

## A. Customary international law

### 1. Managing transboundary environmental harm

Within the context of concerns about transboundary environmental harm as between states, it is important to appreciate that as a consequence of territorial sovereignty, a state has broad freedom with respect to projects in its own territory (hereafter referred to as the ‘State of Origin’). However, the equal sovereignty of other states means that the State of Origin is not free to ignore the potential environmental impact of its project on its neighbours. At the same time, the rights that follow from the equal sovereignty of a potentially affected state does not give it a veto over every project by the State of Origin that has the potential to cause transboundary environmental harm.<sup>42</sup> At the core of this issue is the need to balance the interests of the State of Origin and potentially affected states.

Building on its predecessor, the 1972 Stockholm Declaration of the United Nations Conference on the Human Environment,<sup>43</sup> the 1992 Rio Declaration on Environment and Development offers an oft-cited formulation that seeks to balance these competing interests:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities

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<sup>37</sup> *Siting of Nuclear Facilities*, IAEA, <https://www.iaea.org/topics/siting> (last visited July 19, 2021).

<sup>38</sup> See Section II. IAEA, *supra* note 14, 45-48.

<sup>39</sup> *Id.*, s. 3.12.

<sup>40</sup> IAEA, *Managing EIA*, *supra* note 27, 4, 7.

<sup>41</sup> IAEA, *Safety Assessment for Facilities and Activities*, ¶ 1.9, IAEA Doc. No. STI/PUB/1714 (Feb. 2016).

<sup>42</sup> *Territorial and Maritime Dispute (Nicar. v. Colom.)*, Judgment, 2012 I.C.J. Rep. 751, at ¶ 8 (Nov. 19) (separate opinion of Donoghue J.).

<sup>43</sup> United Nations Conference on the Human Environment, Stockholm Declaration of the United Nations Conference on the Human Environment princ. 21, U.N. Doc. A/CONF.48/14/Rev.1 (June 16, 1972).

within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.<sup>44</sup>

It is within this context that this section seeks to determine the extent to which customary international law provides normative support for transboundary consultation. According to the International Law Commission (ILC), customary international law is formed when two constituent elements are present - general practice (state practice) that is accepted as law (*opinio juris*).<sup>45</sup> In assessing evidence for the purpose of ascertaining whether there is a general practice and whether that practice is accepted as law (*opinio juris*), regard must be had to the overall context, the nature of the rule and the particular circumstances in which the evidence in question is to be found.<sup>46</sup>

## 2. Duty to prevent transboundary environmental harm

Under customary international law, States are required to regulate and control activities within their territory, or subject to their jurisdiction and control, which pose a significant risk of transboundary environmental harm. While this obligation has sometimes been referred to as the 'prevention principle' and has its origins in the well-known *Trail Smelter Arbitration* case,<sup>47</sup> it is important to appreciate from the outset that it is more than a principle and is regarded as a rule of customary international law.

This was confirmed by the International Court of Justice (ICJ) several years following the adoption of the 1992 Rio Declaration on Environment and Development. Citing its own advisory opinion on the *Legality of the Threat or Use of Nuclear Weapons* in the *Gabčíkovo-Nagymaros* case, the ICJ held that:<sup>48</sup>

The Court recalls that it has recently had occasion to stress, in the following terms, the great significance that it attaches to respect for the environment, not only for States but also for the whole of mankind:

"...The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment." (*Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996*, pp. 241-242, para. 29.)<sup>49</sup>

In 2001, several years after the *Gabčíkovo-Nagymaros* case, the ILC adopted the Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities<sup>50</sup> with the 'prevention principle' as its cornerstone. Its preamble specifically refers to the competing interests as between the State of Origin and potentially affected states and recalls the Rio Declaration. Article 3 of the Draft Articles provides that the "State of Origin<sup>51</sup> shall take all appropriate measures to prevent significant transboundary harm or at any event to minimise the risk thereof."

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<sup>44</sup> United Nations Conference on Environment and Development, Rio Declaration on Environment and Development princ. 2, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), annex I (Aug. 12, 1992).

<sup>45</sup> Int'l Law Comm'n, Rep. on the Work of its Seventieth Session, 127, U.N. Doc. A/73/10 (2018).

<sup>46</sup> *Id.*

<sup>47</sup> *Trail Smelter Case (Can./U.S.)*, 35 A.J.I.L. 684, 716 (Mar. 11, 1941).

<sup>48</sup> *Gabčíkovo-Nagymaros Project (Hung./Slovk.)*, Judgment, 1997 I.C.J. Rep. 7, 41 (Sept. 25).

<sup>49</sup> *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion*, 1996 I.C.J. Rep. 226, 241 (July 8).

<sup>50</sup> Int'l Law Comm'n, Rep. on the Work of Its Fifty-Third Session, U.N. Doc. A/56/10, 148-170 (Aug. 10, 2001).

<sup>51</sup> The activities of the State of Origin include activities in the territory of the State as well as activities under its jurisdiction and control.

The Draft Articles apply to activities involving the risk of causing significant transboundary harm, which includes “risks taking the form of a high probability of causing significant transboundary harm and a low probability of causing disastrous transboundary harm”.<sup>52</sup> Like the other work of the ILC, the Draft Articles are intended to be a mix of the codification of customary international law and the progressive development of international law.<sup>53</sup> Moreover, according to *Crawford*, they provide an authoritative statement on the scope of a state’s international legal obligation to prevent a risk of transboundary harm.<sup>54</sup>

### 3. Due diligence nature of the ‘prevention principle’

As discussed above, states have an obligation to regulate and control activities within their territory, or subject to their jurisdiction and control, if they pose a significant risk of transboundary environmental harm under customary international law. This obligation is a due diligence obligation under customary international law.

The ICJ in the *Pulp Mills* case held the State of Origin to a standard of due diligence in the prevention of significant transboundary environmental harm:

The Court points out that the principle of prevention, as a customary rule, has its origins in the due diligence that is required of a State in its territory. It is ‘every State’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States’ (*Corfu Channel* (United Kingdom v. Albania), Merits, Judgment, I.C.J. Reports 1949, p. 22). A State is thus obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State. This Court has established that this obligation ‘is now part of the corpus of international law relating to the environment’ (Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996 (I), p. 242, para. 29).<sup>55</sup>

The ICJ affirmed the due diligence nature of the ‘prevention principle’ in the joined proceedings in *Costa Rica v Nicaragua; Nicaragua v Costa Rica*,<sup>56</sup> relying on its judgment in the *Pulp Mills* case.<sup>57</sup> As succinctly summarised in the separate opinion of Judge Donoghue in *Nicaragua v. Columbia*:

Thus, taking into account the sovereign equality and territorial sovereignty of States, it can be said that, under customary international law, a State of Origin has a right to engage in activities within its own territory, as well as an obligation to exercise due diligence in preventing significant transboundary environmental harm.<sup>58</sup>

As observed in the first report of the International Law Association Study Group on Due Diligence in International Law:

Some very inherently risky activities (such as operating nuclear power plants) may cause significant transboundary damage, but escape legal responsibility if due diligence has been

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<sup>52</sup> Int’l Law Comm’n, Rep. on the Work of Its Fifty-Third Session, *supra* note 50, 151-152.

<sup>53</sup> G.A. Res. 174 (II), Statute of the International Law Commission, Arts. 15-24 (Nov. 21, 1947).

<sup>54</sup> See Int’l Law Association, First Rep. of the ILA Study Group on Due Diligence in Int’l Law, 5 (Mar. 7, 2014); JAMES R. CRAWFORD, *BROWNIE’S PRINCIPLES OF PUBLIC INTERNATIONAL LAW*, 356-7, (8th ed. 2012).

<sup>55</sup> *Pulp Mills on the River Uruguay* (Arg. v. Uru.), Judgment, 2010 I.C.J. Rep. 14, ¶ 101 (Apr. 20).

<sup>56</sup> *Certain Activities Carried Out by Nicaragua in the Border Area* (Costa Rica v. Nicar.) and *Construction of a Road in Costa Rica along the San Juan River* (Nicar. v. Costa Rica), Judgment, 2015 I.C.J. Rep. 665, ¶ 104 (Dec. 16).

<sup>57</sup> *Arg. v. Uru.*, 2010 I.C.J. Rep., ¶ 101.

<sup>58</sup> *Nicar. v. Colom.*, 2012 I.C.J. Rep. 751, ¶ 8 (separate opinion of Donoghue J.).

observed. This is why States have concluded treaties over such activities and ascribed strict liability to make sure that innocent victims receive at least some kind of compensation.<sup>59</sup>

While the ILC's Draft Articles themselves do not specifically mention due diligence, the Commentaries on the Draft Articles make clear that the duty to take "preventive or minimisation measures is one of due diligence" and that "[t]he standard of due diligence against which the conduct of the State of origin [of transboundary environmental harm] should be examined is that which is generally considered to be appropriate and proportional to the risk of transboundary harm in the particular instance."<sup>60</sup> The Commentaries further state that it "is the conduct of the State of origin that will determine whether the State has complied with its obligation under the present articles. The duty of due diligence involved, however, is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so."<sup>61</sup>

#### 4. Obligation to conduct an EIA, notify and consult

The ICJ in the *Nicaragua v. Costa Rica* case sought to distinguish between the substantive and procedural obligations that flow from the due diligence obligation.<sup>62</sup> It held that apart from the obligation not to cause transboundary harm (as discussed above), which it characterised as the substantive obligation, the due diligence obligation also entails several procedural obligations. These obligations include a duty to conduct an EIA to determine if there is a risk of significant transboundary harm and a duty to notify and consult with potentially affected States.

According to the ICJ, to fulfil the obligation to exercise due diligence in preventing significant transboundary environmental harm, a state must, before embarking on an activity having the potential to adversely affect the environment of another state, ascertain if there is a risk of significant transboundary harm, which would trigger the requirement to carry out an EIA. Relying on the *Pulp Mills* case in its judgment, it held:

Furthermore, the Court concluded in that case that "it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource" (*ibid.*, p. 83, para. 204). Although the Court's statement in the *Pulp Mills* case refers to industrial activities, the underlying principle applies generally to proposed activities which may have a significant adverse impact in a transboundary context.<sup>63</sup>

This statement in *Pulp Mills* was subsequently relied upon by the International Tribunal for the Law of the Sea (ITLOS) as authority for the position that the obligation to conduct an EIA is a general obligation

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<sup>59</sup> Int'l Law Association, *supra* note 54, 27. See also Günther Handl, *Preventing Transboundary Nuclear Pollution: A Post-Fukushima Legal Perspective*, in *TRANSBOUNDARY POLLUTION*, 197 (A. Jayakumar et al. eds., 2015).

<sup>60</sup> Int'l Law Comm'n, Rep. on the Work of Its Fifty-Third Session, *supra* note 50, 154.

<sup>61</sup> *Id.* See also Int'l Law Association, *supra* note 54, 5. These principles are consistent with those articulated within the context of law of the sea cases on the protection of the marine environment. See *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, ITLOS Case No. 17, Advisory Opinion, ¶ 110, 117 (Feb. 1, 2011) 2011 ITLOS Rep. 10; *Request for Advisory Opinion submitted by the Sub-Regional Fisheries Commission*, ITLOS Case No. 21, Advisory Opinion, ¶ 129 (Apr. 2, 2015) 2015 ITLOS Rep. 4; *South China Sea Arbitration (Phil. v. China)*, PCA 2013-19, Award, ¶ 128-129 (July 12, 2016), <https://pcacases.com/web/sendAttach/2086> (last visited July 20, 2021).

<sup>62</sup> See Int'l Law Association, Second Rep. of the ILA Study Group on Due Diligence in Int'l Law, 5 (July 2016); Jutta Brunnée, *Procedure and Substance in International Environmental Law: Confused at a Higher Level*, EUROPEAN SOCIETY OF INTERNATIONAL LAW [ESIL] (June 2016), [https://esil-sedi.eu/post\\_name-123/](https://esil-sedi.eu/post_name-123/) (last visited July 20, 2021).

<sup>63</sup> *Arg. v. Uru.*, 2010 I.C.J. Rep. 14, ¶ 104.

under customary law, distinct from one that flows from the obligation of due diligence.<sup>64</sup> However, it is noted that this issue continues to be the subject of some academic debate, in particular, the ICJ's use of the term "general international law" as opposed to the ITLOS's use of the term "customary international law".<sup>65</sup>

Determination of the content of the EIA should be made in light of the specific circumstances of each case. The ICJ reaffirmed the following position taken in the *Pulp Mills* case:

it is for each State to determine in its domestic legislation or in the authorisation process for the project, the specific content of the environmental impact assessment required in each case, having regard to the nature and magnitude of the proposed development and its likely adverse impact on the environment as well as to the need to exercise due diligence in conducting such an assessment (I.C.J. Reports 2010 (I), p. 83, para. 205).<sup>66</sup>

Once again relying on its judgment in *Pulp Mills*, the ICJ stated that the obligation to conduct an EIA requires an *ex ante* evaluation of the risk of significant transboundary harm and as such, an EIA must be conducted prior to the implementation of a project.<sup>67</sup>

Apart from the procedural obligation to conduct an EIA, the ICJ in *Nicaragua v. Costa Rica* also held that due diligence requires that the state planning to undertake the activity, notify and consult in good faith with the affected state. These procedural obligations arise where the EIA confirms a risk of significant transboundary harm and where it is necessary to determine the appropriate measures to prevent or mitigate that risk.<sup>68</sup> While not specifically addressed in the ICJ's judgment, in addition to compliance with these procedural obligations aimed at preventing or minimising transboundary harm, another factor broadly indicative of a State of Origin's due diligence is the degree of its cooperation with the state(s) potentially affected.<sup>69</sup>

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<sup>64</sup> Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area, 2011 ITLOS Rep. 10, ¶ 145, 147; *See also* Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, 2011 ITLOS Rep. 10, ¶ 75. *But see* *Nicar. v. Colom.* 2012 I.C.J. Rep. 751, ¶ 13 (separate opinion of Donoghue J.) where Donoghue J. expressed reservation that State practice and *opinio juris* would support the existence of such a specific rule, in addition to the underlying obligation of due diligence.

<sup>65</sup> Boyle is of the view that transboundary EIA is a "distinct and freestanding" obligation in international law but recognises that the Court in *Pulp Mills* (*Arg. v. Uru.*) also endorsed the alternative view that EIA is a necessary element of the general obligation of due diligence in the prevention and control of transboundary harm. *See* Alan Boyle, *Developments in International Law of EIA and their Relation to the Espoo Convention*, 20 REV. EUROPEAN, COMP. & INT'L. ENVTL. L. 227, 227 (2012). In contrast, Bendel and Harrison argue that the ICJ's use of the term "general international law" has both advantages by way of not requiring strict standards for the obligation to be applicable, as well as disadvantages due to the lack of clarity in the source and trigger for this obligation. *See* Justine Bendel & James Harrison, *Determining the legal nature and content of EIAs in International Environmental Law: What does the ICJ decision in the joined Costa Rica v Nicaragua/Nicaragua v Costa Rica cases tell us?*, 42 QUESTIONS OF INT'L. L. 13, 20 (2021); Treves argues that the ICJ's decision to ignore the ITLOS statement that the obligation to conduct EIA is a custom is deliberate and stems from the Court's hesitance to use environmental law litigation as a stage for a discussion of the doctrine of the sources of international law. Tullio Treves, *Chapter 21: Environmental Impact Assessment and the Precautionary Approach: Why Are International Courts and Tribunals Reluctant to Consider Them as General Principles of Law?*, in GENERAL PRINCIPLES AND THE COHERENCE OF INTERNATIONAL LAW 379 (Mads Andenas et al. eds., 2019).

<sup>66</sup> *Costa Rica v. Nicar.*, 2015 I.C.J. Rep. 665, ¶ 104.

<sup>67</sup> *Arg. v. Uru.*, 2010 I.C.J. Rep., ¶ 161; Rumiana Yotova, *The Principles of Due Diligence and Prevention in International Law*, 75:3 CAMBRIDGE L. J. 445, 448 (2016); Xiaoqin Zhu & Jinlong He, *International Court of Justice's Impact on International Environmental Law: Focusing on the Pulp Mills Case*, 23 Y. B. INT'L. ENV. L. 106, 120-21 (2012).

<sup>68</sup> *Nicar. v. Colom.*, 2012 I.C.J. Rep., at ¶ 104, 168 (separate opinion of Donoghue J.).

<sup>69</sup> Handl, *supra* note 59, 198.

In the ILC's Draft Articles, similar obligations are placed on the State of Origin to assess the risk of possible transboundary harm, including through conducting an EIA,<sup>70</sup> as well as to notify,<sup>71</sup> consult,<sup>72</sup> and cooperate<sup>73</sup> with the state potentially affected, if the assessment indicates the risk of significant transboundary harm.

While customary international law sets out the obligations of a State of Origin towards potentially affected states, it does not prescribe a procedure for transboundary consultation.. Furthermore, the obligations, while applying to hazardous activities such as those involving nuclear power plants, are not specifically tailored to such activities. As such, it is pertinent to understand how transboundary EIAs could act as a mechanism to facilitate transboundary consultation. In this regard, the UNECE Espoo Convention has been described as "an exemplary standard for the process to be followed when conducting an EIA".<sup>74</sup> It sets out a detailed procedure for transboundary consultation not provided by customary international law and provides guidance on how to implement such a procedure for nuclear-related activities.

## B. UNECE normative framework

### 1. Overview

In this section, we turn to the Espoo Convention under the umbrella of the UNECE. The UNECE works on different thematic areas including environmental policy through policy dialogue, negotiation of international legal instruments and the development of regulations and norms. It has developed and adopted several environmental treaties including the Espoo Convention. The Espoo Convention was adopted in 1991 and entered into force on 10 September 1997. It is a regional convention currently ratified by 45 State Parties, most of which are European states, apart from Canada, the USA and Russia.<sup>75</sup> Currently, the Espoo Convention is only open to UNECE Member States<sup>76</sup> for accession, but steps are being taken so that it can be open for global accession.<sup>77</sup>

This Convention provides State Parties with yet another normative basis for transboundary consultation within the nuclear context. At the heart of the Convention is the obligation to assess at an early stage of the decision-making process, the environmental impact of major projects under consideration that are likely to have a significant adverse environmental impact across national borders and to notify and consult potentially affected parties. The Espoo Convention sets out in detail the procedure for making such an assessment and is considered best practice on how to conduct a transboundary EIA.<sup>78</sup> The implementation of the procedure of the Espoo Convention ensures that the

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<sup>70</sup> Int'l Law Comm'n, Rep. on the Work of Its Fifty-Third Session, *supra* note 50, Art. 7.

<sup>71</sup> *Id.*, Art. 8 (the State of Origin is to provide the State likely to be affected with timely notification of the risk and the assessment and all relevant information).

<sup>72</sup> *Id.*, Art. 9 (the States concerned may enter into consultations, at the request of any of them).

<sup>73</sup> *Id.*, Art. 4.

<sup>74</sup> *Costa Rica v. Nicar.*, 2015 I.C.J. Rep., ¶ 32 (Separate Opinion of Bhandari J.). See also Marie Cletienne, *International Court of Justice on Potential Transboundary Damage and its Consequences in Nuclear Law*, 2010(2) NUCLEAR L. BULL. 59, 65 (2011).

<sup>75</sup> The Espoo Convention currently has 45 Parties. The latest status of the Espoo Convention can be found at *Convention on Environmental Impact Assessment in a Transboundary Context*, UNITED NATIONS TREATY COLLECTION, [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XXVII-4&chapter=27&clang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-4&chapter=27&clang=en) (last visited July 20, 2021).

<sup>76</sup> UNECE includes 56 member States in Europe, North America and Asia. *Member States And Member States Representatives*, UNECE, <https://unece.org/member-states-and-member-states-representatives> (last visited July 20, 2021).

<sup>77</sup> At present, the Espoo Convention is not yet open for accession by non-UNECE Member States. However, in time to come when the few remaining UNECE Member States ratify the amendment allowing for accession by non-UNECE Member States, it would be technically possible for ASEAN Member States to become parties to the Espoo Convention.

<sup>78</sup> *Costa Rica v. Nicar.*, 2015 I.C.J. Rep. 665, ¶ 32 (Dec. 16) (Separate Opinion of Bhandari J.).

competent authorities and the public from potentially affected parties are notified and consulted prior to any final decision-making on the relevant project.

## 2. Application to nuclear energy-related activities

The Espoo Convention lists a wide range of proposed activities to which the Convention applies.<sup>79</sup> These are activities that could have a significant adverse transboundary environmental impact and include nuclear energy-related activities such as the planned construction of a nuclear power plant.<sup>80</sup> Given that over 40 percent of the State Parties to the Espoo Convention have nuclear power programmes, it is not surprising that the Espoo Convention explicitly lists nuclear energy-related activities as applicable activities.<sup>81</sup>

Building on the guidance documents on the application of the Espoo Convention is the Good Practice Recommendations on the Application of the Convention to Nuclear Energy-related Activities (Good Practice Recommendations).<sup>82</sup> Adopted in 2017,<sup>83</sup> their aim is to assist with the consistent application of the Espoo Convention by illustrating existing good practices and through the sharing of experiences and information. However, they neither are a legal interpretation of the Convention, nor impose obligations under it.

## 3. Obligations at the early stage of a project under consideration

The full EIA procedure contemplated by the Espoo Convention entails many procedural obligations, which are beyond the scope of this paper to describe in full. Instead, this section will focus on the State Party under whose jurisdiction the relevant proposed activity (here, the proposed construction of the nuclear power plant) is envisaged to take place, i.e. the State of Origin. It will discuss key obligations placed on the State of Origin that are relevant to transboundary consultation at the early stage of the decision-making process, focusing on the overarching obligation to conduct an EIA and specifically, the obligations to notify and consult in respect of the EIA documentation, which form the basis for consultations. For an overview of the stages of an assessment according to the Espoo Convention, see Figure 2 below.

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<sup>79</sup> Espoo Convention, *supra* note 6, Appendix I.

<sup>80</sup> Second amendment of Appendix I of the Espoo Convention *inter alia* provides ‘Nuclear power stations and other nuclear reactors, including the dismantling or decommissioning of such power stations or reactors (except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load)’. Espoo Convention, *supra* note 6, Appendix I.

<sup>81</sup> Of the 45 parties to the Espoo Convention, the following 20 states have nuclear power programmes at present: Armenia, Belarus, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Finland, France, Germany, Hungary, Netherlands, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine and the United Kingdom of Great Britain and Northern Ireland. *Country Profiles*, WORLD NUCLEAR ASSOCIATION, <https://www.world-nuclear.org/information-library/country-profiles.aspx> (last visited July 15, 2021).

<sup>82</sup> United Nations Economic Commission for Europe, *Good Practice Recommendations on the Application of the Convention to Nuclear Energy-related Activities*, ECE/MP.EIA/2017/10 (Mar. 31, 2017) [hereinafter *Good Practice Recommendations*]. There are twelve examples by nine states in the Espoo Good Practice Recommendations: Austria, Bulgaria, Finland, Germany, Hungary, Poland, Romania, Slovakia and Sweden. There are 15 practical examples in the additional informal document. See United Nations Economic Commission for Europe, *Practical examples on the application of the Convention to nuclear energy-related activities*, ECE/MP.EIA/2017/INF.6 (Apr. 26, 2017).

<sup>83</sup> It is noted that the *Good Practice Recommendations* were adopted almost 30 years after the entry into force of the Espoo Convention.

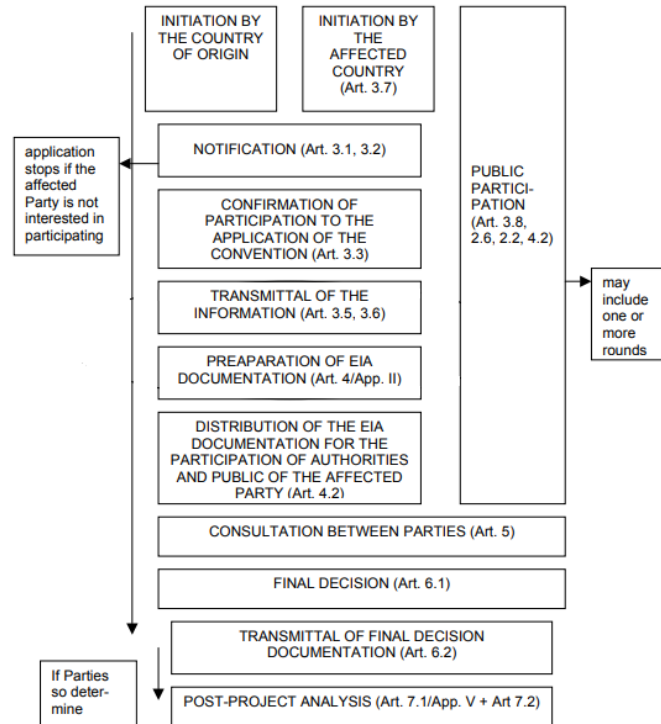


Figure 2: Flow-chart of the stages of an assessment according to the Espoo Convention. Source: UNECE<sup>84</sup>

### a) **Overarching obligation to conduct a transboundary EIA**

While an initial screening mechanism is required to determine whether an activity listed in Appendix I is likely to cause significant adverse transboundary impact (thereby falling within the scope of the Convention), State Parties to the Espoo Convention typically accept that the planned construction of a nuclear power plant falls within the application of the Convention and would proceed to conduct a transboundary EIA.<sup>85</sup> Under the Espoo Convention, the State of Origin is obliged to undertake an EIA, which provides not only the competent authorities, but also, the public of potentially affected states an opportunity to participate in the EIA procedures.<sup>86</sup>

### b) **Obligation to notify**

Potentially affected states should be notified and provided with the relevant information as soon as possible so that they can decide whether to participate in the transboundary EIA process, where they would then be able to provide feedback.<sup>87</sup> This should take place no later than when the public of the State of Origin is notified of its intention to construct a nuclear power plant.<sup>88</sup> In practice, this notification tends to occur at the scoping, rather than the screening, stage of EIA documentation (see below).

<sup>84</sup> United Nations Economic Commission for Europe, *Guidance on the Practical Application of the Espoo Convention*, 10, ECE/MP.EIA/8 (Apr. 30, 2006).

<sup>85</sup> See Espoo Convention, *supra* note 6, Appendix I, Art. 2; ESI-CIL Nuclear Governance Project, REGIONAL COOPERATION TO ENHANCE TRANSBOUNDARY CONSULTATION ON NUCLEAR POWER DEVELOPMENT IN SOUTHEAST ASIA SUMMARY REPORT (2019), ¶ 2.4, <https://cil.nus.edu.sg/wp-content/uploads/2019/11/Workshop-on-Transboundary-Consultation-on-NPP-Development-Summary-Report-P.pdf> (last visited July 20, 2021) [hereinafter CIL TRANSBOUNDARY CONSULTATION WORKSHOP REPORT].

<sup>86</sup> Espoo Convention, *supra* note 6, Art. 2.

<sup>87</sup> *Id.*, Art. 3.

<sup>88</sup> *Id.*, Art. 3(1).



Regarding the identification of states that could be potentially affected, the Good Practice Recommendations advocate a wide notification that goes beyond just the neighbouring states, to avoid misunderstandings and potential disputes later on, given the great public concern and national interests involved when it comes to nuclear energy-related activities.<sup>89</sup> Where a potentially affected state feels that it is likely that the Espoo Convention should be applied, but has not received a notification, it may initiate discussions on the issue of significance with the state proposing to construct the nuclear power plant i.e. the State of Origin. Should the states not be able to agree on the issue of significance, they can submit the issue to an inquiry commission for a determination.<sup>90</sup>

### **c) Obligation in respect of EIA documentation**

Once the potentially affected state indicates that it intends to participate in the EIA procedure as contemplated under the Espoo Convention, the next step is for the State of Origin to furnish the competent authority or authorities and the public of the potentially affected state(s) with the EIA documentation.<sup>91</sup> The EIA documentation must contain, at a minimum, the information described in Appendix II to the Espoo Convention. Such information would include reasonable alternatives to the proposed activity; the potential environmental impacts of the proposed activity and its alternatives; and the mitigation measures. The overall aim is to present all key information relevant to decision-making.<sup>92</sup>

It is noted that the Espoo Convention does not expressly provide for the scoping of the EIA documentation (i.e. to determine the scope of the EIA report) in consultation with all relevant stakeholders prior to its actual preparation. However, the Good Practice Recommendations advocate carrying out a scoping procedure with the early participation of the potentially affected state(s) and/or including scoping documents in the notification, to help potentially affected states better understand the contents of the EIA documentation and consequently simplify the consultation procedures.<sup>93</sup>

### **d) Obligation to consult**

In accordance with the Espoo Convention, the State of Origin is required, after the completion of the EIA documentation and without undue delay, to enter into consultations with the potentially affected state concerning, among other matters, the potential transboundary impact of the proposed activity and measures to reduce or eliminate its impact. Consultations may also relate to possible alternatives to the proposed activity.<sup>94</sup> These consultations usually occur in the form of bilateral or multilateral discussions between authorities that have been authorised by the State of Origin and the potentially affected state(s).

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<sup>89</sup> Good Practice Recommendations, *supra* note 82, ¶ 2.

<sup>90</sup> Espoo Convention, *supra* note 6, Art. 3(7). As a means for resolving disputes over whether the threshold has been met, the inquiry procedure calls for the appointment of an independent inquiry commission, at the request of either the source state or the affected state, which conducts its own inquiry as to whether the threshold has been met. To this end, the inquiry procedure is structured on the premise that a determination of significant transboundary impact is predominantly a technical and scientific matter, as indicated by the requirement that the commission's members shall be experts and that the commission's final opinion 'be based on accepted scientific principles'. The commission's findings are recommendations and as such are non-binding. Instead, the inquiry procedure relies on appeals to accepted scientific norms and community pressure to bring about compliance. See NEIL CRAIK, *THE INTERNATIONAL LAW OF ENVIRONMENTAL IMPACT ASSESSMENT: PROCESS, SUBSTANCE AND INTEGRATION*, 136 (2008).

<sup>91</sup> Espoo Convention, *supra* note 6, Art. 4.

<sup>92</sup> *Id.*

<sup>93</sup> Good Practice Recommendations, *supra* note 82, ¶ 43.

<sup>94</sup> Espoo Convention, *supra* note 6, Art. 5.

The Espoo Convention does not specify the duration of the consultation period. It merely provides that State Parties are to agree on a “reasonable timeframe for the consultation period” at the start of such consultation.<sup>95</sup> Wherever State Parties have consulted according to the Convention, the average consultation period has been between one and two months, depending on the complexity of the nuclear energy-related project, although there have been cases where consultations have lasted up to six months.<sup>96</sup>

While the arrangements for transboundary notification (see above) and consultation can be made on an ad hoc basis, it has been found that these processes can be made more efficient through bilateral or multilateral agreements when conducting a transboundary EIA.<sup>97</sup> Such agreements could provide an overarching and systemic framework for several logistical arrangements that are not detailed in the Espoo Convention, such as translation arrangements, cost assignment, as well as transboundary public participation arrangements.<sup>98</sup>

#### e) *Taking due account of the outcome of the EIA in decision-making*

The Espoo Convention obliges the State of Origin to share with potentially affected states its final decision on the proposed construction of the nuclear power plant and the reasons and considerations on which the decision was based. This decision must explain how the state has duly taken into account the outcome of the EIA, including the EIA documentation, comments received during the EIA process and the outcome of consultations.<sup>99</sup> By taking into consideration all relevant stakeholders’ concerns, including those of the public, the State of Origin stands to benefit from making informed decisions. Rather than losing its decision-making power, the state retains the final word.<sup>100</sup>

### 4. Compliance mechanism

The Implementation Committee, established during the Meeting of the Parties to the Convention in 2001,<sup>101</sup> reviews State Parties’ compliance with their obligations (including those relating to notification and consultation as discussed above) under the Convention<sup>102</sup> with a view to assisting them to fully meet their commitments. The Implementation Committee’s objective is to assist State Parties with their implementation of the Convention, rather than penalise non-compliance.<sup>103</sup> It has been suggested that findings of non-compliance by the Committee, notwithstanding the lack of sanctions, appear to have a deterrent effect as states do endeavour to comply with the Convention to

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<sup>95</sup> *Id.*

<sup>96</sup> Good Practice Recommendations, *supra* note 82, ¶ 70.

<sup>97</sup> CIL TRANSBOUNDARY CONSULTATION WORKSHOP REPORT, *supra* note 85, ¶ 3.6.

<sup>98</sup> United Nations Economic Commission for Europe, Resource Manual to Support Application of the Protocol on SEA, 90, ECE/MP.EIA/17 (Dec. 2011).

<sup>99</sup> See Espoo Convention, *supra* note 6, Art. 6.

<sup>100</sup> CIL TRANSBOUNDARY CONSULTATION WORKSHOP REPORT, *supra* note 85, ¶ 2.5.

<sup>101</sup> The Committee was established by the Meeting of the Parties to the Convention in February 2001. It consists of eight members nominated by Parties who are in turn elected by the Meeting of the Parties: See United Nations Economic Commission for Europe, What UNECE does for you ...UNECE makes sure States apply the Espoo Convention, 2 (Sept. 2009), [https://unece.org/DAM/env/eia/documents/ImplementationCommittee/0923749\\_Espoo\\_ENG.pdf](https://unece.org/DAM/env/eia/documents/ImplementationCommittee/0923749_Espoo_ENG.pdf) (last visited July 20, 2021).

<sup>102</sup> The Implementation Committee also reviews State Parties’ compliance with their obligations under the Kyiv Protocol. See Section IV.B.1.

<sup>103</sup> The Committee considers any submission made by one or more Parties that have concerns about another Party’s compliance to its obligations under the Convention. The Committee also considers any submission made by a Party that concludes that, despite its best efforts, it is or will be unable to comply fully with its obligations under the Convention—this is sometimes termed “self-referral”. In addition, where the Committee becomes aware of possible non-compliance by a Party with its obligations, it may request the Party concerned to provide more information—this is the “Committee initiative”. United Nations Economic Commission for Europe, *supra* note 101, 3.

maintain their credibility and in the hope of receiving reciprocal treatment from other states who are parties to the Convention.<sup>104</sup> The Implementation Committee has considered and opined on several submissions involving nuclear power plants over the years, including in the case of *Hinkley Point C*, where the United Kingdom was found not to be in compliance with its notification obligations as State of Origin and was urged to ensure that the Espoo Convention is applied in the context of any future decision-making regarding planned nuclear power plants, including by sending timely notifications.<sup>105</sup>

## 5. Relationship between the Espoo Convention and customary international law

In light of the above discussion on the normative basis for transboundary consultation, both under customary international law and the Espoo Convention, the question that arises is whether these bases are mutually exclusive or somehow related and if so, how?

As observed by *Boyle*, what is clear is that the main elements of an EIA in customary international law closely follow the main elements of the Espoo Convention.<sup>106</sup> Such elements include the obligation to do an EIA in situations where significant transboundary harm is likely (where the trigger for both is the risk of significant transboundary harm) and the provisions on notification and cooperation are all reflected in customary international law as well.<sup>107</sup> However, many of the detailed provisions of the Espoo Convention are not found in customary law. For example, there is no listing of activities likely to cause transboundary harm, no inquiry process in disputed cases, no provision for public participation in the EIA process and no detailed prescription of the contents of EIA documentation. Furthermore, a binding treaty such as the Espoo Convention may contain institutional provisions (such as the Implementation Committee discussed above) that customary law cannot replicate.<sup>108</sup>

As discussed above, the ICJ in *Pulp Mills* made clear that “it may now be considered a requirement under general international law” to undertake an environmental impact assessment where there is a risk of significant adverse impact in a transboundary context; it also made clear that it is up to national law or regulation to prescribe the content of the EIA.<sup>109</sup> In terms of the Espoo Convention, the ICJ was quick to dismiss it as irrelevant to the case, given that the parties in *Pulp Mills* were not parties to the Convention.

While the ICJ’s judgment in the *Nicaragua* case did not discuss the Espoo Convention, its role in the setting of minimum international EIA standards was discussed in considerable detail in the Separate Opinion of Justice Bhandari in the *Nicaragua* case, where he noted that “[i]n view of the paucity of guidance from the Court and other sources of international law, it could plausibly be argued there are presently no minimum binding standards under public international law that nation-States must follow when conducting an EIA.”<sup>110</sup> In Justice Bhandari’s view, the Espoo Convention is “an exemplary standard for the process to be followed when conducting an EIA”.<sup>111</sup> In this sense, it does illustrate Boyle’s point that the relationship between treaty and custom is “incestuous in the sense that both

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<sup>104</sup> CIL TRANSBOUNDARY CONSULTATION WORKSHOP REPORT, *supra* note 85.

<sup>105</sup> United Nations Economic Commission for Europe, *Findings and recommendations of the Implementation Committee on compliance by the United Kingdom of Great Britain and Northern Ireland with its obligations under the Convention in respect of the Hinkley Point C nuclear power plant*, 19, ECE/MP.EIA/2019/14 (Nov. 26, 2018).

<sup>106</sup> Boyle, *supra* note 65, 231.

<sup>107</sup> See Angel Anastassov, *The Sovereign Right to Peaceful Use of Nuclear Energy and International Environmental Law*, in I NUCLEAR NON-PROLIFERATION IN INTERNATIONAL LAW, 159 (Jonathan L. Black-Branch & Dieter Fleck eds., 2014).

<sup>108</sup> Boyle, *supra* note 65, 231.

<sup>109</sup> See Section III.A.4.

<sup>110</sup> *Costa Rica v. Nicar.*, 2015 I.C.J. Rep. 665, ¶ 29 (Separate Opinion of Bhandari J.).

<sup>111</sup> *Costa Rica v. Nicar.*, 2015 I.C.J. Rep. 665, ¶ 32 (Separate Opinion of Bhandari J.).

feed off, replenish and reinforce each other. This is often the case in international law, but it does not mean that the two are identical, or that one displaces the other.”<sup>112</sup>

Overall, the Espoo Convention, with its compliance mechanism, provides a strong normative basis for transboundary consultation, albeit only for State Parties, setting out a detailed procedure for such consultation not provided by customary international law. It also provides guidance on how to implement such a procedure for nuclear-related activities through the Good Practice Recommendations.<sup>113</sup>

## C. IAEA normative framework

This section focuses on elements of the normative framework under the auspices of the IAEA that facilitate transboundary consultation within the context of nuclear safety.

### 1. Background to the framework

While the regulation of nuclear safety is primarily within the national domain, radiation risks may transcend national borders. Thus, international cooperation is imperative as it serves to promote and enhance safety globally, through the exchange of experiences, as well as improve capabilities to prevent, manage and respond to accidents.<sup>114</sup>

A key part of the IAEA’s mandate is the promotion of international cooperation.<sup>115</sup> As a result, it is no surprise that the IAEA normative framework relating to nuclear safety, consisting of international safety-related conventions, safety standards and other guidelines serve to facilitate international cooperation.

The IAEA safety standards is a hierarchy of norms comprising the Safety Fundamentals, Safety Requirements and Safety Guides.<sup>116</sup> The IAEA Safety Fundamentals establish the fundamental safety objective of protecting people and the environment from the harmful effects of ionizing radiation, as well as principles of protection and safety (see figure below for an overview of the safety standards).<sup>117</sup> Governed by the objective and principles of the Safety Fundamentals, the Safety Requirements set out requirements that must be met to ensure the protection of people and the environment. The Safety Guides provide recommendations and guidance on how to comply with the Safety Requirements.<sup>118</sup> The IAEA safety standards cover a range of issues including the operation of nuclear power plants.<sup>119</sup> These standards reflect an international consensus<sup>120</sup> on what constitutes a high level of safety and security for protecting people and the environment and are generally considered

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<sup>112</sup> Boyle, *supra* note 65, 231.

<sup>113</sup> *Good Practice Recommendations*, *supra* note 82.

<sup>114</sup> IAEA, *Fundamental Safety Principles*, 1, IAEA Doc. No. STI/PUB/1273 (Nov. 2006).

<sup>115</sup> 1956 Statute of the International Atomic Energy Agency, Art. III.B.I, Oct. 23, 1956, 276 U.N.T.S. 3.

<sup>116</sup> *Safety Standards*, IAEA, <https://www.iaea.org/resources/safety-standards> (last visited July 18, 2021).

<sup>117</sup> IAEA, *supra* note 114.

<sup>118</sup> IAEA, *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards*, 23, IAEA Doc. No. STI/PUB/1578 (July 2014)

<sup>119</sup> IAEA, *supra* note 114, 1.

<sup>120</sup> See also CHANG WON JOON ET AL., COMPARATIVE STUDY ON NPP DESIGN REQUIREMENTS BETWEEN IAEA AND KOREA, 1 (2012), [https://www.kns.org/files/pre\\_paper/3/298%EC%9E%A5%EC%9B%90%EC%A4%80.pdf](https://www.kns.org/files/pre_paper/3/298%EC%9E%A5%EC%9B%90%EC%A4%80.pdf) (last visited July 18, 2021); Tatsuya Itoi et al., *International Standards and National Regulation on Seismic Safety Assessment*, in EARTHQUAKE ENGINEERING FOR NUCLEAR FACILITIES 171, 173 (Masanori Hamada & Michiya Kuno eds., 2017).

reflective of good and best practices.<sup>121</sup> See Figure 3 for an overview of the structure of the IAEA Safety Standards Series.

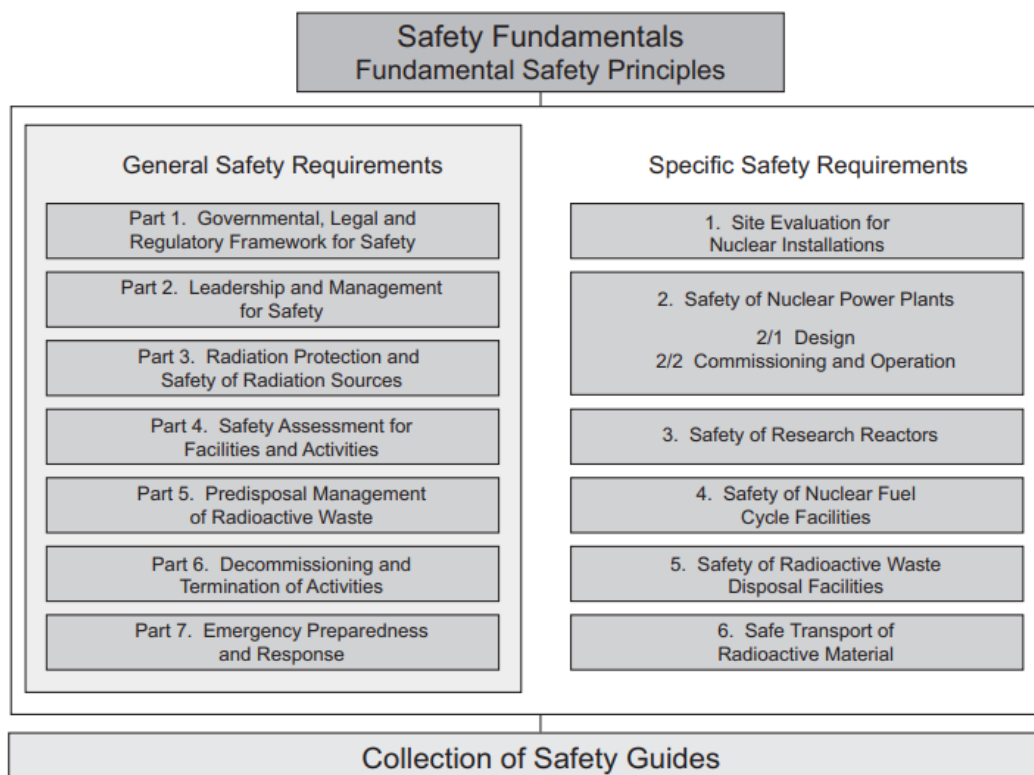


Figure 3: Structure of the IAEA Safety Standards Series. Source: IAEA<sup>122</sup>

The IAEA safety standards, in particular, have a status that is derived from the IAEA’s Statute, which authorises the IAEA to “establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialised agencies concerned, standards of safety for protection of health and minimisation of danger to life and property [...] and to provide for the application of these standards”.<sup>123</sup> The IAEA safety standards are binding on the IAEA in respect of its own operations, including those operations that the IAEA assists states with.<sup>124</sup>

<sup>121</sup> *Safe Use of Nuclear Technology: The Role of the IAEA Safety Standards*, IAEA, 3 (Apr. 2019), <https://www.iaea.org/sites/default/files/19/04/safe-use-of-nuclear-technology.pdf> (last visited July 18, 2021) [hereinafter *Safe Use of Nuclear Technology*]. Michael Bothe also recognises this, “[Safety Standards] carry a significant practical weight due to two factors. They are based on recognised expert knowledge and thus enjoy the legitimacy which results from expertise. Government experts (*i.e.*, officials who afterward are called upon to implement them) contribute to their elaboration which is important for avoiding later problems of non-observance or non-implementation.” See Michael Bothe, *The Peaceful Use of Nuclear Energy and the Protection of the Environment*, in *NUCLEAR NON-PROLIFERATION IN INTERNATIONAL LAW - VOLUME III* (Jonathan L. Black-Branch & Dieter Fleck eds., 2016); Johan Rautenbach et al., *Overview of the International Legal Framework Governing the Safe and Peaceful Uses of Nuclear Energy – Some Practical Steps*, in *INTERNATIONAL NUCLEAR LAW IN THE POST-CHERNOBYL PERIOD*, 8 (2006), <https://www.oecd-nea.org/upload/docs/application/pdf/2019-12/nea6146-iaea-chernobyl.pdf> (last visited July 18, 2021).

<sup>122</sup> IAEA, *supra* note 118, 23.

<sup>123</sup> 1956 Statute of the International Atomic Energy Agency, *supra* note 115, Art. III.A.6.

<sup>124</sup> *Id.*, Art. III.A.6 (“to provide for the application of these standards to its own operations as well as to the operations making use of materials, services, equipment, facilities, and information made available by the Agency or at its request or under its control or supervision; and to provide for the application of these standards, at the request of the parties, to operations under any bilateral or multilateral arrangement, or, at the request of a State, to any of that State’s activities in the field of atomic energy”).

However, they are not legally binding on the Member States, though they may adopt them in their national regulations in relation to their own activities at their own discretion.<sup>125</sup>

Apart from the IAEA safety standards but complementing them, the IAEA also provides information and guidance through the IAEA Nuclear Energy Series.<sup>126</sup> It comprises reports designed to encourage and assist research and development of nuclear energy for peaceful uses and its applications. Information and guidance are presented in guides, technical reports and best practices for peaceful uses of nuclear energy based on inputs from international experts.<sup>127</sup> Another category of IAEA publications is the IAEA Technical Documents (TECDOCs). TECDOCs report on different aspects of the Agency's ongoing work<sup>128</sup> including any outcomes of meetings. They do not have any legal effect and do not enjoy the same status as the IAEA Safety Standards Series. One such TECDOC is discussed in Section III.D below. It is a document produced to share outcomes from various meetings.<sup>129</sup>

## 2. Relevant treaties and related instruments

The Convention on Nuclear Safety<sup>130</sup> aims to commit contracting parties who operate land-based civil nuclear power plants to maintain a high level of safety by establishing fundamental safety principles for different areas, including siting, design, construction and operation.<sup>131</sup> It is a legally binding instrument under the auspices of the IAEA expressly requiring contracting parties to ensure that there are procedures for consulting other contracting parties in the “vicinity” of the proposed nuclear power plant that are likely to be affected, as part of a broader safety assessment of a proposed nuclear power plant.<sup>132</sup> Upon request, such parties are to be provided with the “necessary information” to enable them to assess the “likely safety impact” on their territory.<sup>133</sup>

The Convention on Nuclear Safety does not define the terms “vicinity”, “necessary information” and “safety impact”. In fact, although there were proposals to define the terms “vicinity” and “necessary information” at the time of the drafting of the Convention, they were dismissed.<sup>134</sup> One possible explanation could be that this was intentional so as to allow greater flexibility in the Convention’s application. Moreover, transboundary EIAs are not specifically mentioned, although they are a potential mechanism through which this obligation can be implemented.<sup>135</sup> Furthermore, it is

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<sup>125</sup> *Safe Use of Nuclear Technology*, *supra* note 121, 3.

<sup>126</sup> The structure of the IAEA Nuclear Energy Series is structured into four levels: 1) The Nuclear Energy Basic Principles publication describes the rationale and vision for the peaceful uses of nuclear energy. 2) Nuclear Energy Series Objectives publications describe what needs to be considered and the specific goals to be achieved in the subject areas at different stages of implementation. 3) Nuclear Energy Series Guides and Methodologies provide high-level guidance or methods on how to achieve the objectives related to the various topics and areas involving the peaceful uses of nuclear energy. 4) Nuclear Energy Series Technical Reports provide additional, more detailed information on activities relating to topics explored in the IAEA Nuclear Energy Series. *Nuclear Energy Series*, IAEA, 6-7 (Jan. 2021), <https://www.iaea.org/sites/default/files/21/01/nuclear-energy-series-2021.pdf> (last visited July 18, 2021).

<sup>127</sup> IAEA, *Building a National Position*, *supra* note 27, 7.

<sup>128</sup> *IAEA Technical Documents (IAEA-TECDOCs)*, IAEA, <https://www-pub.iaea.org/mtcd/publications/tecdocs.asp> (last visited Nov. 19, 2021).

<sup>129</sup> For example, the TECDOC on EIA for SMRs is the main outcome of “four consultancy meetings (11–13 April 2012, 9–11 October 2012, 2–4 September 2014, and 11–14 February 2019) and one technical meeting (28– 31 October 2013).” IAEA, *Considerations for Environmental Impact Assessment for Small Modular Reactors*, IAEA-TECDOC-1915 (June 2020), 1.

<sup>130</sup> Convention on Nuclear Safety, Sept. 20, 1994, 1963 U.N.T.S. 293.

<sup>131</sup> *Id.*, preamble, ¶ (viii).

<sup>132</sup> *See id.*, Art. 17. A similar provision is also reflected in the Joint Convention in relation to a proposed spent fuel management facility (Art. 6) and a proposed radioactive waste management facility (Art. 13). However, the Joint Convention is not within the scope of inquiry in this paper. Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, *opened for signature* Sep. 29, 1997, 2153 U.N.T.S. 303.

<sup>133</sup> Convention on Nuclear Safety, *supra* note 130, Art. 17.

<sup>134</sup> *Id.*, 55-56, 58.

<sup>135</sup> *See* CIL TRANSBOUNDARY CONSULTATION WORKSHOP REPORT, *supra* note 85, ¶ 2.2.

important to note that the Convention does not itself establish relevant standards in general and specific to transboundary consultation and EIAs. Instead, it requires states to establish a legislative and regulatory framework in order to achieve the said objective.<sup>136</sup>

The Convention does not have a sanctions regime. However, it has provided for a peer-review mechanism in the form of “Review Meetings” held every three years.<sup>137</sup> The purpose of these meetings is to review the national reports submitted<sup>138</sup> by the contracting parties on their implementation of obligations under the Convention, to incentivise states to fulfil their conventional obligations.<sup>139</sup> Within this forum, there may be indications as to whether a state has made provisions for the consultation required by Article 17 of the Convention on Nuclear Safety, as well as opportunities for other states to raise questions.

### 3. Relevant standards and guidelines

We turn now to IAEA safety standards and guidelines through the IAEA Nuclear Energy Series that are relevant, in that they support transboundary consultation within the context of siting.

#### a) *General safety requirements on the Governmental, Legal and Regulatory Framework*

The IAEA Safety Standards on Governmental, Legal and Regulatory Framework for Safety (General Safety Requirement Part 1 or GSR Part 1) set out requirements relating to the governmental and legal framework for establishing a regulatory body<sup>140</sup> and other actions that need to be taken to ensure effective regulatory control of facilities and activities.<sup>141</sup> Requirement 36 encourages communication and consultation with interested parties:<sup>142</sup>

The regulatory body shall promote the establishment of appropriate means of informing and consulting interested parties and the public about the possible radiation risks associated with facilities and activities, and about the processes and decisions of the regulatory body.

While GSR Part 1 does not in and of itself define “interested parties”, it refers to the IAEA Safety Glossary for a definition of the terms used in GSR Part 1. The Glossary defines “interested parties” as typically including “other States, especially neighbouring States that have entered into agreements providing for an exchange of information concerning possible transboundary impacts”.<sup>143</sup> The IAEA Milestones Approach recognises that the development of an effectively independent regulatory body, with all the required expertise, resources and responsibility for all regulatory matters necessary for a nuclear power programme, is a key step in Phase 2.<sup>144</sup> Once established, such a regulatory body is responsible for establishing the appropriate means of informing and consulting neighbouring states,

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<sup>136</sup> Convention on Nuclear Safety, *supra* note 130, Art. 7.

<sup>137</sup> *Id.*

<sup>138</sup> *Id.*, Art. 5.

<sup>139</sup> Michel Mountjoie, *Treaty Implementation Applied to Conventions on Nuclear Safety*, 96 NUCLEAR L. BULL. 9, 21, 23 (2015); TREVOR FINDLAY, UNLEASHING THE NUCLEAR WATCHDOG. STRENGTHENING AND REFORM OF THE IAEA (2012), 34 (ebook).

<sup>140</sup> The establishment of a regulatory body in and of itself is a requirement (Requirement 3) under GSR Part 1. IAEA, *Governmental, Legal and Regulatory Framework for Safety*, 6, IAEA Doc. No. STI/PUB/11713 (Feb. 2016)

<sup>141</sup> *Id.*, 2.

<sup>142</sup> *Id.*, 34-35.

<sup>143</sup> IAEA, *IAEA Safety Glossary: Terminology Used in Nuclear Safety and Radiation Protection (2018 Edition)*, 116-17, IAEA Doc. No. STI/PUB/1830 (June 2019).

<sup>144</sup> IAEA, *supra* note 14, ¶ 3.1.2.

thereby facilitating transboundary consultation, within the context of siting activities which take place during Phase 2 and beyond.<sup>145</sup>

**b) General safety requirements on the protection of people and the environment**

The IAEA Safety Standards on Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (General Safety Requirement Part 3 or GSR Part 3) establish requirements for the protection of people and the environment from the harmful effects of ionizing radiation and for the safety of radiation sources.<sup>146</sup> Where there is a likelihood of public exposure beyond national borders, as could be the case with a nuclear power plant, GSR Part 3 states that the government or regulatory body is responsible for ensuring that impacts outside the jurisdiction or control of the State of Origin are covered in the relevant assessment and means established for information exchange and consultation:

When a source within a practice<sup>147</sup> could cause public exposure outside the territory or other area under the jurisdiction or control of the State in which the source is located, the government or the regulatory body:

- a) *Shall ensure that the assessment for radiological impacts includes those impacts outside the territory or other area under the jurisdiction or control of the State;*
- b) Shall, to the extent possible, establish requirements for the control of discharges;
- c) *Shall arrange with the affected State the means for the exchange of information and consultations, as appropriate” (emphasis added).*<sup>148</sup>

Pursuant to GSR Part 3, the regulatory body is responsible for enforcing the requirements for safety assessments and making the operator of the nuclear power plant responsible for the conduct of an appropriate safety assessment during various stages, including during siting.<sup>149</sup>

**c) General safety requirements on safety assessment for facilities**

The IAEA Safety Standards on Safety Assessment for Facilities and Activities (General Safety Requirement Part 4 or GSR Part 4) establish the generally applicable requirements to be fulfilled in safety assessments for facilities and activities.<sup>150</sup> Safety assessments are to be undertaken as a means of evaluating compliance with safety requirements for all facilities and activities. The assessments are to be carried out and documented by the organisation responsible for operating the facility or

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<sup>145</sup> As mentioned above, siting studies begin as early as in Phase 1 and continue through Phase 2 and with final confirmation of the site in Phase 3. See IAEA, *supra* note 14, s. 3.12.

<sup>146</sup> For the purpose of establishing practical requirements for protection and safety, these Standards distinguish between three different types of exposure situations: planned exposure situations, emergency exposure situations and existing exposure situations. Together, these three types of exposure situations cover all situations of exposure for which these Standards apply. For each of the three types of exposure situation, the requirements are further grouped into requirements for occupational exposure, public exposure and (for planned exposure situations only) medical exposure. See IAEA, *supra* note 118, 29.

<sup>147</sup> Practices include: (a) The production, supply, provision and transport of radioactive material and of devices that contain radioactive material, including sealed sources and unsealed sources and of consumer products; (c) The generation of nuclear power, including any activities within the nuclear fuel cycle that involve or that could involve exposure to radiation or exposure due to radioactive material. See IAEA, *supra* note 118, 29.

<sup>148</sup> *Id.*, 65.

<sup>149</sup> Prior to the granting of an authorisation, the responsible person or organisation shall be required to submit a safety assessment, which shall be reviewed and assessed by the regulatory body. See *id.*, 38.

<sup>150</sup> IAEA, *supra* note 41, 1.



conducting the activity. They are to be independently verified and are to be submitted to the regulatory body as part of the licensing or authorisation process. Such a safety assessment is independent of and complementary to, the principles and requirements governing the overall assessment of the environmental impact of a planned activity.

GSR Part 4 applies to nuclear power plants and their activities and envisages that safety assessments will be carried out at various stages of the lifetime of a nuclear power plant, including at the stage of a site evaluation for the plant. Specifically, this is an assessment of the site characteristics relating to the safety of the nuclear power plant and covers, among other characteristics, “...the distribution of the population around the site and its characteristics with regard to any siting policy of the State, the potential for neighbouring States to be affected and the requirement to develop an emergency plan”.<sup>151</sup>

What is clear is that GSR Part 4 requires the safety assessment to take into account the potential for neighbouring states to be affected. In this way, it serves as a mechanism that could help facilitate transboundary consultation. However, such assessment is based on a graded approach, where the scope and level of detail of the site assessment shall be consistent with the possible radiation risks associated with the type of nuclear power plant to be operated and the purpose of the assessment (here, to determine whether a new site is suitable for the nuclear power plant). Such a safety assessment will need to be independently verified, before the operator can use the assessment or submit it to the authorities to determine whether it has been carried out in an “acceptable way”.<sup>152</sup> In addition, the regulatory body shall carry out a separate independent verification to satisfy itself that the safety assessment is “acceptable” and to determine whether it provides an “adequate demonstration of whether the legal and regulatory requirements are being met”.<sup>153</sup> Although not expressly stated, it is difficult to imagine how such an assessment can be done without notifying and consulting the potentially affected state.<sup>154</sup>

#### **d) *Guidelines on managing siting activities for nuclear power plants and stakeholder involvement***

Siting is a key infrastructure issue in the IAEA Milestones Approach.<sup>155</sup> Thus, apart from the above IAEA safety standards, other relevant guidelines includes the IAEA Safety Guide on Licensing Process for Nuclear Installation (Specific Safety Guide 12 or SSG-12)<sup>156</sup> as well as the IAEA Nuclear Energy Series No. NG-T-3.7 Managing Siting Activities for Nuclear Power Plants (hereafter, IAEA Siting Guidelines).<sup>157</sup>

The Specific Safety Guide 12 recommends that a state planning to site a nuclear power plant close to their national border should carry out consultations with neighbouring states.<sup>158</sup> Such consultations should take place as early as during Phase 1 of the Milestones Approach when the consultation mechanism is to be established.<sup>159</sup>

In addition to the Specific Safety Guide 12, there is also the IAEA Siting Guidelines, which serves to provide guidance on the siting activities of a nuclear power plant to help states identify, assess and license sites for nuclear power plants, taking into account all relevant factors including environmental

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<sup>151</sup> *Id.*, ¶ 4.22(c).

<sup>152</sup> *Id.*, ¶ 4.67.

<sup>153</sup> There is no further guidance on this issue even in the detailed specific safety requirements.

<sup>154</sup> IAEA, *supra* note 41, 28-29.

<sup>155</sup> IAEA, *supra* note 14, s. 3.12.1.

<sup>156</sup> IAEA, *Licensing Process for Nuclear Installations*, SSG-12, IAEA Doc. No. STI/PUB/1468 (Oct. 2010).

<sup>157</sup> IAEA, *Managing Siting Activities for Nuclear Power Plants*, IAEA Doc. No. STI/PUB/1565 (June 2012).

<sup>158</sup> IAEA, *supra* note 156, s. 3.3.

<sup>159</sup> IAEA, *supra* note 14, s. 3.12.1.

and social factors. For newcomer states, it provides a framework for managing siting activities within the development of national infrastructure for nuclear power development.<sup>160</sup>

The IAEA Siting Guidelines includes guidance on stakeholder involvement, which is a key issue for any siting project. These guidelines refer to the IAEA Nuclear Energy Series No. NG-T-1.4 on Stakeholder Involvement throughout the Life Cycle of Nuclear Facilities (hereafter, IAEA Stakeholder Involvement Guidelines).<sup>161</sup> This publication demonstrates the importance of stakeholder involvement throughout the life cycle of all nuclear facilities and presents general guidance on stakeholder involvement. The IAEA Stakeholder Involvement Guidelines also applies in the context of a state's national decision (see Section IV.C.1.b).

It is clear in the IAEA Stakeholder Involvement Guidelines that stakeholders could include neighbouring states. In the context of a state considering nuclear power, it provides that:

open communication with all stakeholders, including decision-makers, public, media and *neighbouring countries*, should address all of the issues of nuclear power benefits, nationally and locally, as well as the risks, commitments and obligations. This honest approach is essential in order to build and maintain trust and confidence in a nuclear power programme. (Emphasis added)<sup>162</sup>

Interestingly, the IAEA Siting Guidelines appear to interpret the obligation to consult contracting parties within the vicinity of a nuclear power plant under the Convention on Nuclear Safety as neighbouring states:

The Convention on Nuclear Safety (CNS) requests, among other things, that the State implementing a nuclear power programme consults with the neighbouring States and provides them with the necessary information, upon their request, to enable them to make their own impact assessment on their territories. Other treaties also require the involvement of neighbouring countries. Countries may set up, where appropriate, institutional arrangements or enlarge the mandate of existing institutional arrangements within the framework of bilateral and multilateral agreements.<sup>163</sup>

The provision appears to allude to the Espoo Convention (see UNECE normative framework above), being an international treaty requiring “the involvement of neighbouring countries” and makes the practical suggestion for institutional arrangements to facilitate such consultation. However, it should be noted that while the IAEA Siting Guidelines clearly interpret the Convention on Nuclear Safety as placing an obligation on the State of Origin to undertake transboundary consultation, it is silent on the implementing mechanism.

### *e) Guidelines on managing EIA*

Oftentimes, public perception and acceptance of a nuclear power project tend to centre on environmental issues. Yet, most states embarking on a nuclear power programme are likely to have little to no experience of environmental issues specific to nuclear programmes. The premise of the IAEA Nuclear Energy Series NG-T-3.11 Managing Environmental Impact Assessment for Construction and Operation in New Nuclear Power Programmes (hereafter, IAEA EIA Guidelines)<sup>164</sup> is that the conduct of a nuclear EIA is key to addressing, holistically, both radiological and non-radiological

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<sup>160</sup> IAEA, *supra* note 156, 1.

<sup>161</sup> *Id.*, 43. See IAEA, *supra* note 12.

<sup>162</sup> *Id.*, ¶ 2.2.1.

<sup>163</sup> IAEA, *supra* note 156, 46.

<sup>164</sup> IAEA, *Managing EIA*, *supra* note 27.

impacts of a nuclear power programme at the project level.<sup>165</sup> The Guidelines describe the EIA process, its use and the necessary infrastructure for such a process, emphasising the environmental aspects unique to a nuclear power programme.<sup>166</sup> The Guidelines set out the steps taken throughout the EIA process—from the initial environmental information collection, through the environmental scoping report, to the completion of the EIA report.

The IAEA EIA Guidelines contemplate that the EIA process could begin during the initial state of the siting process, and recommend consultation throughout the EIA process with the relevant stakeholders, including international stakeholders in accordance with the “policy and law” of the embarking state.<sup>167</sup> The Guidelines highlight the need to manage differences in stakeholder regulations (as between neighbouring states) to avoid hampering the provision of transboundary input into the EIA process.<sup>168</sup>

Overall, the IAEA normative framework clearly encourages the consultation of neighbouring states when it comes to the siting of a nuclear power plant. Mechanisms for transboundary consultation include EIAs and safety assessments conducted as part of the siting process. It recommends that transboundary consultation within the context of siting, commence during Phase 1 of the IAEA Milestone Approach, which outlines factors to be considered before a state makes the decision to launch its nuclear power programme.

#### **4. Relationship between the Convention on Nuclear Safety and IAEA safety standards**

The relationship between the Convention on Nuclear Safety and the IAEA safety standards and guidelines have resulted in some debate as to whether the safety standards have been incorporated by reference into the Convention. This contention arises from text within the preamble to the Convention, which refers to a commitment to the application of the “fundamental safety principles” as well as “internationally formulated safety guidelines which are updated from time to time and so can provide guidance on contemporary means of achieving a high level of safety”.<sup>169</sup> The significance of this issue is that if the Convention on Nuclear Safety does indeed incorporate the IAEA safety standards and guidelines, it follows that the IAEA standards and guidelines discussed earlier in support of transboundary consultation would form part of a State Party’s obligations under the Convention.<sup>170</sup> This view has not received support from states party to the Convention and is at odds with the clear absence of sanctions in the Convention.<sup>171</sup>

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<sup>165</sup> Contrast this with SEA in respect of a nuclear power programme at the strategic planning stage, see Section IV.C.1.c.

<sup>166</sup> The IAEA EIA Guidelines assume that a state embarking on such a programme already has an environmental regulatory framework for the industrial projects in place.

<sup>167</sup> IAEA, *Managing EIA*, *supra* note 27, Fig 2, 7, 8.

<sup>168</sup> “If the EIA process includes consultations with other States based on the policy and legislation of the State, the timelines for stakeholder involvement would have to take into account the differences between the legal and regulatory systems of neighbouring States. For example, the stakeholder process that is familiar to a neighbouring State may be subject to different regulations regarding stakeholders, or may have different timelines for completion. The time required for document translation may also significantly affect the overall schedule. In planning the stakeholder involvement process, the competent authority should consider these complex issues. A modification in the stakeholder regulations may be required to allow the transboundary input to be taken into account for the EIA process.” *See id.*, 8.

<sup>169</sup> Convention on Nuclear Safety, *supra* note 130, preamble, ¶ viii.

<sup>170</sup> Günther Handl argues that it is a way to give a bigger role to the safety standards which can be deemed to either inform the “interpretation of the installation State’s conventional obligations because they must be deemed expressly incorporated as such or, alternatively, because they generally reflect the degree of due diligence the installation State will have to apply in a particular situation.” Handl, *supra* note 59, 200-202.

<sup>171</sup> After the Fukushima-Daiichi nuclear power plant accident, there was a push to amend the convention by proposing that the safety standards be made compulsory. Another related proposal was to make IAEA peer reviews compulsory. *See* Mark

## D. Considerations for Small Modular Reactors

As indicated in Section I.A. above, the focus of this paper is on traditional large-scale nuclear power plants due to the many uncertainties surrounding the economic viability of small modular reactors (SMRs), which are needed for international commercial deployment to take place. In spite of these uncertainties, SMRs continue to receive a lot of attention, more recently for the potential role they can play in mitigating climate change, alongside renewable energy. As such, this paper will briefly introduce SMRs and share initial observations on the potential applicability of the different normative frameworks discussed above to SMRs.

### 1. Opportunities and challenges facing SMRs

According to the IAEA, SMRs are “advanced reactors that produce electricity of up to 300 MW(e) per module”.<sup>172</sup> At present, there are over 70 SMR concepts under development, covering a wide range of technology approaches and maturity levels.<sup>173</sup> In general, due to the reduced size of SMRs (as compared to traditional large reactors), key design features of SMRs are said to offer the promise of enhanced safety, improved security and flexibility (in terms of where they may be located and what they can produce (here, beyond traditional baseload electricity generation). Given their “small” and “modular” nature, SMRs are said to have the potential to change the business case for nuclear power, for example, through lower upfront capital, shorter construction times, greater scalability (in case of multi-unit SMRs) and reducing the overall investment and capital risk.<sup>174</sup>

However, as mentioned above, for SMRs to be economically viable, this business case must translate into a global market for SMRs. Whether a global market can be achieved depends on there being sufficient market demand, supply chain maturity as well as available financing. To date, the outlook for such a global market remains uncertain. While the COVID-19 pandemic has intensified calls in many quarters to accelerate the clean energy transition, where energy systems are facing pressure to decarbonise, allow-carbon energy options, including SMRs, will need to compete for opportunities within the fast-evolving energy landscape.

Furthermore, governance frameworks are needed to support any future international commercial deployment due to the cross-border nature of such commercial transactions. SMRs could be designed, manufactured and operated in different states, each with its own national regulatory approaches. In

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Hibbs, *A Failed Effort to Toughen Nuclear Safety Standards*, CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE (Feb. 18, 2015), <https://carnegieendowment.org/2015/02/18/failed-effort-to-toughen-nuclear-safety-standards-pub-59114> (last visited July 18, 2021). However, this was seen as an “unwelcome incursion” into the territories of contracting parties. This was opposed by China, India and the US. “While international nuclear safety and security standards have been continuously and progressively developed, the use of these standards was never made mandatory. Many disagree with obligatory international controls, at least in part, because multilateral negotiation of standards often leads to outcomes that reflect the lowest common denominator”. See Int’l Law Association 78<sup>th</sup> Biennial Conference, *Legal Aspects of the Use of Nuclear Energy for Peaceful Purposes*, 7 (2018), [https://www.ila-hq.org/images/ILA/DraftReports/DraftReport\\_NuclearWeapons.pdf](https://www.ila-hq.org/images/ILA/DraftReports/DraftReport_NuclearWeapons.pdf) (last visited July 18, 2021). As such, express incorporation seems unlikely as something unintended by the parties to the Convention. In addition, other commentators have also argued that this proposal cannot be reconciled with the clear absence of sanctions in the conventions (the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management) since if they are enforceable they should incur sanctions. See Mountjoie, *supra* note 139, 23.

<sup>172</sup> Small modular reactors (SMR), IAEA, <https://www.iaea.org/topics/small-modular-reactors> (last visited Nov. 16, 2021).

<sup>173</sup> See generally, *Advances in Small Modular Reactor Technology Developments*, IAEA (Sept. 2020), [https://aris.iaea.org/Publications/SMR\\_Book\\_2020.pdf](https://aris.iaea.org/Publications/SMR_Book_2020.pdf) (last visited Nov. 18, 2021).

<sup>174</sup> See generally, *Small Modular Reactors: Challenges and Opportunities*, OECD NEA (Aug. 2021), [https://www.oecd-nea.org/upload/docs/application/pdf/2021-03/7560\\_smr\\_report.pdf](https://www.oecd-nea.org/upload/docs/application/pdf/2021-03/7560_smr_report.pdf) (last visited Nov. 19, 2021).

light of these different national approaches, what is required for the effective and efficient governance of this global enterprise? What is clear is that the effective governance of this global enterprise will require international collaboration and cooperation. This key issue is currently being addressed by a wide range of stakeholders from industry and regulatory bodies, through different international platforms, such as the IAEA, OECD Nuclear Energy Agency and the World Nuclear Association. Progress in this area is ongoing, but the pace has been said to be slow and not likely to be in time for the first wave of SMR deployment.<sup>175</sup>

## 2. Applicability of the different normative frameworks

This section considers the applicability of the various normative frameworks discussed above to SMRs. It should be noted that in the specific context of marine-based SMRs, there may also be other normative frameworks that would be potentially applicable, such as the UN Convention on the Law of the Sea, or those rules, standards and guidelines under the auspices of the International Maritime Organisation (IMO). These normative frameworks are beyond the scope of this paper.<sup>176</sup>

### a) Customary international law

Under customary international law, as discussed in Section III.A, States have a due diligence obligation to regulate and control activities within their territory, or subject to their jurisdiction and control, to prevent transboundary harm (also known as the ‘prevention principle’). This obligation entails the duty to conduct an EIA and the duty to notify and consult where the EIA confirms the risk of significant transboundary harm. This would apply to any SMR deployment by a state, as it has a general obligation to ensure that any activity (regardless of technology), within its jurisdiction and control, respects the environment of other States or of areas beyond national control.<sup>177</sup>

### b) UNECE normative framework

The Espoo Convention applies to nuclear-related activities listed in Appendix I, including “nuclear power stations and other nuclear reactors”.<sup>178</sup> As drafted, this activity appears to be broad enough to potentially encompass SMRs. This also appears to be the case for the Good Practice Recommendations on the Application of the Convention to Nuclear Energy-related Activities, which as discussed earlier, aims to assist with the consistent application of the Espoo Convention.<sup>179</sup>

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<sup>175</sup> Helen Cook’s presentation entitled “Legal and regulatory solutions to facilitate SMR deployment” at CIL Webinar, *A Multi-Pronged Approach towards Small Modular Reactor Regulation* held on July 28, 2021, <https://cil.nus.edu.sg/event/a-multi-pronged-approach-towards-small-modular-reactor-regulation/> (last visited Nov. 15, 2021).

<sup>176</sup> The importance of considering these other frameworks has been recognised by the IAEA as can be seen in their 2013 preliminary study on legal and institutional issues arising from TNPPs where these are instruments were considered. IAEA, *Legal and Institutional Issues of Transportable Nuclear Power Plants: A Preliminary Study*, 57-77, IAEA Doc. No. STI/PUB/1624 (Oct. 2013), <https://www.iaea.org/publications/10516/legal-and-institutional-issues-of-transportable-nuclear-power-plants-a-preliminary-study> (last visited Nov. 15, 2021).

<sup>177</sup> See Section III.A above.

<sup>178</sup> As listed in the Second Amendment of Appendix I of the Espoo Convention, “Nuclear power stations and other nuclear reactors, including the dismantling or decommissioning of such power stations or reactors (except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load)”. Espoo Convention, *supra* note 6, Appendix I. It is to be noted that, for the purposes of this Convention, nuclear power stations and other nuclear reactors cease to be such an installation when all nuclear fuel and other radioactively contaminated elements have been removed permanently from the installation site.

<sup>179</sup> The Good Practice Recommendations Guidance also states that as part of the EIA documentation to be submitted, information on reactor types are to be provided. The scope of this good practice recommendation does not appear to exclude SMRs either and in fact, it provides the opportunity to consider different reactor types including SMRs. See *Good Practice Recommendations*, *supra* note 82, 11, 18.

To date, it would appear that there have not been discussions within the context of the Meeting of the Parties and the Working Group on EIA, of the applicability of the UNECE normative framework to SMRs. In recent years, the focus of these meetings, insofar as nuclear energy-related activities are concerned, has been in relation to the applicability of the Espoo Convention to the lifetime extension of nuclear power plants.

Among the 20 Member States of the UNECE that currently operate nuclear power plants, several of them are considering SMR deployment and in the case of the US and Canada, are actively working towards licensing SMRs.<sup>180</sup> Beyond such states, the UNECE is also actively exploring the potential of a variety of clean energy options, including the nuclear energy option, in its journey towards carbon neutrality and sustainable development. As such, it seems only a matter of time before discussions within the UNECE will turn to SMRs.

### c) IAEA normative framework

Under the IAEA normative framework, the definition of “nuclear installation” in the Convention on Nuclear Safety is restricted to “land-based civil nuclear power plant”.<sup>181</sup> While broad enough to potentially encompass land-based SMRs, it would exclude marine-based SMRs, both floating nuclear power plants (FNPPs), as well as those which are subsea. Considering that the Convention on Nuclear Safety is the only legally binding instrument under the IAEA normative framework that offers support for transboundary consultation, the normative support for non-land-based SMRs is in this sense, weaker than the support available for traditional land-based reactors.

Aside from the Convention on Nuclear Safety, other safety standards and guidelines including specific guidelines on EIAs in the context of siting was discussed above in Section III.C.3. These standards and guidelines neither explicitly provide for nor exclude their applicability to SMRs. Arguably, the terms used in these standards and guidelines such as ‘nuclear facilities’,<sup>182</sup> ‘nuclear installations’<sup>183</sup> or ‘nuclear power plants’<sup>184</sup> are broad enough to encompass all types of reactors regardless of their capacity.<sup>185</sup>

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<sup>180</sup> *Nuclear Power Technology Brief*, UNECE, 19, [https://unece.org/sites/default/files/2021-08/Nuclear%20power%20brief\\_EN\\_0.pdf](https://unece.org/sites/default/files/2021-08/Nuclear%20power%20brief_EN_0.pdf) (last visited Nov. 15, 2021). One SMR design has been licensed for the United States. In terms of Canada, they are actively licensing multiple SMRs.

<sup>181</sup> Convention on Nuclear Safety, *supra* note 130, Art. 2(i). Full definition as follows: “‘nuclear installation’ means for each Contracting Party any land-based civil nuclear power plant under its jurisdiction including such storage, handling and treatment facilities for radioactive materials as are on the same site and are directly related to the operation of the nuclear power plant. Such a plant ceases to be a nuclear installation when all nuclear fuel elements have been removed permanently from the reactor core and have been stored safely in accordance with approved procedures, and a decommissioning programme has been agreed to by the regulatory body.”

<sup>182</sup> IAEA, *supra* note 41, ¶ 1.6; IAEA, *supra* note 12, Foreword. The term ‘nuclear facilities’ is used and defined within both documents. Other similar terms used include ‘facilities and activities’ and ‘facilities’. See IAEA, *supra* note 140, footnote 3; IAEA, *supra* note 118, 5, 394. The general term ‘facilities and activities’ is used and defined within this document. The term ‘facilities’ is defined in GSR Part 3.

<sup>183</sup> IAEA, *supra* note 156, Interpretation of the Text. The term ‘nuclear installation’ is used in this publication. Reference is made to the IAEA Glossary to define the term. See IAEA, *IAEA Safety Glossary: Terminology Used in Nuclear Safety and Radiation Protection*, IAEA Doc. No. STI/PUB/1290 (2007) [hereinafter IAEA Safety Glossary (2007)].

<sup>184</sup> IAEA, *supra* note 157, ss. 1.2, 1.3, 1.4, 49-50. This publication uses the term ‘nuclear power plant’ in its title. While it refers to the IAEA Safety Glossary (2007) for definitions not provided within the publication, the IAEA Safety Glossary does not define the term “nuclear power plant”, but instead includes this term in the definition for “nuclear facility”. See IAEA Safety Glossary (2007) *supra* note 183, 405.

<sup>185</sup> Some of the publications do not provide a definition or refer to the IAEA Safety Glossary. For example, IAEA, *Managing EIA*, *supra* note 27: In this publication, it uses the term “nuclear power technology”. It goes on to state “Awareness of the specifics of nuclear technologies is required by all parties” without defining the technology considered thus leaving the term broad. In this document, the term ‘nuclear power plant’ is used, but it has not been defined.

Apart from construing existing IAEA instruments, standards and guidelines for their applicability to SMRs, there is also ongoing work being undertaken by the IAEA in respect of SMRs. Such work includes a review of existing IAEA instruments, standards and guidelines to address uncertainties and gaps related to the governance of SMRs. Some of this work has resulted in SMR-specific publications by the IAEA. In 2020, the IAEA published a TECDOC that discusses the approaches to address specific issues relating to the environmental impact assessment for SMRs.<sup>186</sup> See Section III.C.1 above for more information on this type of publication.

The TECDOC makes it clear that it is to be read in conjunction with earlier guidelines on EIAs (including the IAEA EIA Guidelines),<sup>187</sup> and that its main purpose is to address gaps, or any SMR-specific considerations not covered by such guidelines. The TECDOC states that as with other reactors, SMRs may also involve sites proximate to international boundaries and as such, it is important to identify all potential transboundary impacts to enable communication and information sharing between different states.<sup>188</sup> It should also be noted that stakeholder involvement as discussed in the IAEA EIA Guidelines (See Section III.C.3.e.) is applicable to SMRs as well.<sup>189</sup>

There are efforts underway to map the applicability of IAEA safety standards to SMRs.<sup>190</sup> The aim of this exercise is to review the applicability of current standards and to assess if there is a need for a new safety standard or technical document to support the implementation of current standards.<sup>191</sup> These efforts will culminate in a safety report that is expected in 2022.<sup>192</sup> As of now, the initial position of the IAEA appears to be that the safety standards are generally applicable (i.e. technology-neutral and therefore applicable to SMRs), with some technology-specific areas potentially benefitting from further guidance.<sup>193</sup> It remains to be seen what the findings of this mapping exercise will reveal and how that may impact the normative base for transboundary consultation in respect of SMRs.

In addition, the 2015 IAEA Nuclear Energy Series publication on Milestones in the Development of a National Infrastructure for Nuclear Power is also currently undergoing its second revision, the draft of

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<sup>186</sup> IAEA, *supra* note 129.

<sup>187</sup> The TECDOC on EIA for SMRs is to be read together with the following guidelines: IAEA, *Managing EIA*, *supra* note 27; IAEA, *Prospective Radiological Environmental Impact Assessment for Facilities and Activities*, IAEA Doc. No. STI/PUB/1819 (Sept. 2018). Where an EIA aspect is not addressed by the TECDOC, the aspect is already covered and no differences are expected for SMRs. See IAEA, *supra* note 129.

<sup>188</sup> *Id.*, 19. “In general, there is no procedural difference for either type [of nuclear power plant whether large reactors or SMRs]. The groups of stakeholders involved may differ (e.g. based on land vs based at sea), but the groups are always site specific, anyway.”

<sup>189</sup> *Id.*, s. 4.4, 20.

<sup>190</sup> Joanne Liou, *How to Apply IAEA Design Safety Standards to SMRs*, IAEA (Feb. 2, 2021), <https://www.iaea.org/newscenter/news/how-to-apply-iaea-design-safety-standards-to-smrs> (last visited Nov. 16, 2021); *Towards a Technology Neutral Nuclear Safety and Regulatory Framework: Applicability of IAEA Safety Standards to SMRs – Questionnaire to SMR Vendors*, IAEA (Oct. 29, 2020), [https://www.iaea.org/sites/default/files/20/10/iaea\\_smr\\_safety\\_webinar\\_presentation\\_29\\_october.pdf](https://www.iaea.org/sites/default/files/20/10/iaea_smr_safety_webinar_presentation_29_october.pdf) (last visited Nov. 28, 2021).

<sup>191</sup> *Id.*, Slide 10.

<sup>192</sup> *Id.* The Safety Report will “propose a mechanism and framework of application of IAEA safety standards to all types of SMR, including water cooled SMR, high temperature gas cooled reactors (HTGR), sodium fast reactors (SFR), lead fast reactors (LFR), molten salt reactors (MSR), marine based SMRs and micro reactors.” See *Towards a Technology Neutral Nuclear Safety and Regulatory Framework: Applicability of IAEA Safety Standards to SMRs – Questionnaire to SMR Vendors*, IAEA, <https://www.iaea.org/nuclear-safety-and-security/department-of-nuclear-safety-and-security-webinars/towards-a-technology-neutral-safety-and-regulatory-framework-applicability-of-iaea-safety-standards-to-smrs-questionnaire-to-smr-vendors> (last visited Nov. 28, 2021).

<sup>193</sup> Based on discussions at “Licensing Novel Advanced Reactors: Addressing the Challenges”, a side event held on 21 September 2021, at the margins of the annual IAEA General Conference that the authors attended. See *Side Events Organized and/or Co-sponsored by the Secretariat During the 65th General Conference*, IAEA, <https://www.iaea.org/about/governance/general-conference/gc65/events/secretariat-side-events> (last visited Nov. 28, 2021) for more details on the event.

which is expected to be ready in 2022. This revision will include specific infrastructure development considerations for novel technologies such as SMRs.<sup>194</sup> It seems unlikely that the revision will fundamentally alter the 19 infrastructure issues and the phases identified and discussed in Section II, although it remains to be seen if there will be further support and clarification in relation to provisions relevant to transboundary consultation.

#### **IV. International normative basis - national decision to embark on a nuclear power programme**

A state considering embarking on a nuclear power programme (hereafter referred to as ‘embarking state’) should base its decision upon a well-defined and knowledgeable national position, founded among other considerations, on sound energy planning.<sup>195</sup> The national position is the outcome of a process that establishes the governmental strategy and commitment to develop, implement and maintain a safe, secure and sustainable nuclear power programme. This process will result in a national decision that communicates the state’s national policy and commitment to proceed according to its international obligations, as well as international norms and standards.<sup>196</sup> The establishment of the national position provides the foundation for the future development and implementation of the nuclear power programme.

As discussed above, the IAEA Milestones Approach sets out criteria to support the development of the infrastructure necessary for introducing nuclear power. As strong and sustained government support is critical to the successful implementation of a nuclear power programme, the issue of national position is identified in the Milestones Approach as Infrastructure Issue 1 and contributes to the development of nuclear infrastructure and fulfilment of the respective milestones.<sup>197</sup> The issue of national position is particularly important to achieving Milestone 1 (Ready to make a knowledgeable commitment to a nuclear power programme), as the establishment of strong, high-level government support, including the relevant public consultations, is a critical first step to embarking on a nuclear power programme.

During the process of establishing a national position for a new nuclear power programme, it is important for the government to consult with a broad range of stakeholders<sup>198</sup> to ensure that political decision-makers have all the necessary information<sup>199</sup> to make a knowledgeable decision and enjoy broad-based support. This process envisages that an embarking state would, where appropriate, engage in transboundary consultation, whether through the mechanism of a SEA or otherwise.

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<sup>194</sup> Based on discussions at “Milestones Approach for Responsible Deployment of Nuclear Technologies”, a side event held on 22 September 2021, at the margins of the annual IAEA General Conference that the authors attended. See *Side Events Organized and/or Co-sponsored by the Secretariat During the 65th General Conference*, IAEA, <https://www.iaea.org/about/governance/general-conference/gc65/events/secretariat-side-events> (last visited Nov. 28, 2021) for more details on the event.

<sup>195</sup> IAEA, *supra* note 14, 1.

<sup>196</sup> IAEA, *Building a National Position*, *supra* note 27, 1.1 and 2.1.

<sup>197</sup> See Section II.

<sup>198</sup> There are three general sets of stakeholders that are usually consulted during this process, political decision-makers and elected officials; professional and technical community and public and other stakeholders including “international communities”: See IAEA, *Building a National Position*, *supra* note 27, 4.

<sup>199</sup> The risks and benefits of nuclear power and its alternatives, but also the social, economic, industrial, environmental and safety implications of the nuclear power programme.



## A. Customary international law

It would appear that the obligation to conduct a SEA has yet to attain the status of customary international law.<sup>200</sup> As indicated in Section III.A above, general practice (state practice) that is accepted as law (*opinio juris*) are the two “constituent elements” of customary international law. The relevant practice must be general, meaning that it must be sufficiently widespread and representative, as well as consistent.<sup>201</sup> At present, it would appear that international practice does not allow, neither on a regional nor on a universal level, to affirm the character of customary international law in this field. The fact that a rule is set forth in a treaty (such as the Kyiv Protocol, which will be discussed below) does not necessarily indicate that the treaty rule reflects a rule of customary international law,<sup>202</sup> unless it is credited as such in the *travaux préparatoires*.<sup>203</sup> Craik, who has characterised SEAs as an “emerging norm”, argues that SEAs can in certain circumstances, be viewed as a way for states to meet the general obligations of due diligence.<sup>204</sup>

While conducting a SEA is at present not a customary international law obligation, its use as a mechanism to facilitate transboundary consultation remains. In this regard, the Kyiv Protocol sets out in detail the procedure for a SEA. Although its focus is on domestic SEAs, its provisions also provide for a transboundary SEA.

## B. UNECE normative framework

### 1. Overview

In this section, we turn to the Kyiv Protocol, which is also under the umbrella of the UNECE. The Protocol operates to extend the scope of the Espoo Convention by extending the notion of environmental assessment to strategic planning at the national and local levels. That said, it is a legally distinct instrument, so a state can accede to the Protocol without being a party to the Espoo

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<sup>200</sup> ALASTAIR NEIL CRAIK & KRISTINE GU, IMPLEMENTATION OF STRATEGIC ENVIRONMENTAL ASSESSMENT IN MARINE AREAS BEYOND NATIONAL JURISDICTION (2019), 15 SSRN; Gunnar Sander, *International Legal Obligations for Environmental Impact Assessment and Strategic Environmental Assessment in the Arctic Ocean*, 31 INT’L J. MARINE & COASTAL L. 88, 97 (2016); Simon Marsden, STRATEGIC ENVIRONMENTAL ASSESSMENT IN INTERNATIONAL AND EUROPEAN LAW: A PRACTITIONER’S GUIDE (2016) (ebook).

<sup>201</sup> *Id.*, 135. Draft Conclusion 8 requiring that the practice must be “general” is particularly applicable in this regard. While ratification of a treaty is one form of state practice recognised as constituting custom, such practice has to be “sufficiently widespread and representative”, a requirement that the Kyiv Protocol may not meet, being a largely regional instrument. *Id.*, Conclusion 8.

<sup>202</sup> Further, Draft Conclusion 22 indicates 3 conditions that need to be met for a practice that is embodied in a treaty to receive the status of custom: (a) codified a rule of customary international law existing at the time when the treaty was concluded; (b) has led to the crystallisation of a rule of customary international law that had started to emerge prior to the conclusion of the treaty; or (c) has given rise to a general practice that is accepted as law (*opinio juris*), thus generating a new rule of customary international law. Currently, there is no evidence in the *travaux préparatoires* of the Kyiv Protocol that SEA was an established practice amongst the State Parties before the Protocol itself was drafted. See *History of the Convention and its Protocol*, UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE, <https://unece.org/fileadmin/DAM/env/eia/about/history.htm> (last visited July 20, 2021).

<sup>203</sup> Astrid Epiney, *Environmental Impact Assessment*, in MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW (Jan. 2009); Int’l Law Comm’n, Rep. on the Work of its Seventieth Session, *supra* note 45, 121. Note: The *travaux préparatoires* are the official record of a negotiation.

<sup>204</sup> According to Craik, international law requires that EIAs should be conducted with due diligence, meeting all requisite EIA requirements including the need for an assessment with proper data and which considers all reasonably foreseeable impacts including cumulative impacts and provides opportunities for consultation with potentially affected states (including their general public). “Insofar as SEA processes are linked to and support EIA by facilitating these requirements, SEA processes can properly be viewed as a way for states to meet the general obligations of due diligence, cooperation and public participation, particularly where effective EIA processes require attention to cumulative and long-term impacts.” CRAIK & GU, *supra* note 200, 13.

Convention.<sup>205</sup> Moreover, unlike the Espoo Convention, which applies only to proposed activities that are likely to cause significant adverse impact across the national frontiers, the focus of the Protocol is on domestic plans and programmes.<sup>206</sup> Should significant transboundary effects from such plans and programmes be likely, the Protocol establishes a legal requirement to carry out a transboundary SEA and prescribes the procedure (see Figure 4 below). The implementation of this procedure allows the competent authorities and the public from potentially affected parties to be notified and consulted prior to any final decision-making on the relevant plan or project.

The Kyiv Protocol was adopted in 2003 and entered into force on 8 October 2009. It is a regional convention with 38 parties.<sup>207</sup> The Protocol is open for accession by any Member State of the United Nations.<sup>208</sup> The Implementation Committee discussed above reviews State Parties' compliance with their obligations under not only the Espoo Convention, but also the Kyiv Protocol, with a view to assisting them to fully meet their commitments.

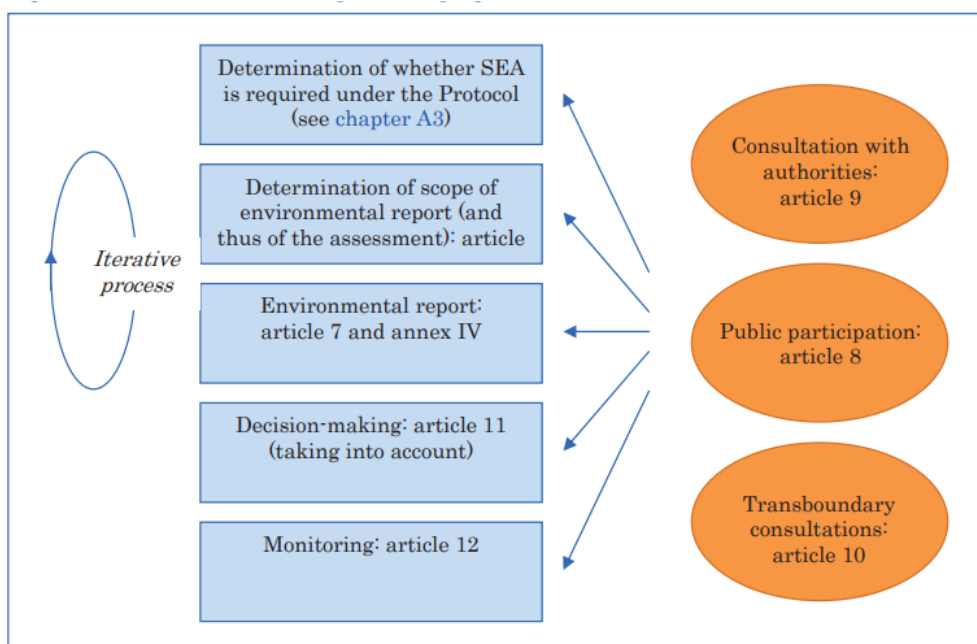


Figure 4: Elements in SEA of plans and programmes. Source: UNECE<sup>209</sup>

## 2. Overarching obligation to conduct a transboundary SEA for nuclear energy-related activities

Under the Kyiv Protocol, SEAs are mandatory for plans and programmes for nuclear energy, which means that the Protocol applies automatically without the need to go through the screening process.<sup>210</sup> Such plans and programmes must be both “required by legislative, regulatory or

<sup>205</sup> Kyiv Protocol, *supra* note 7, Art. 23(3).

<sup>206</sup> UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE, PROTOCOL ON STRATEGIC ENVIRONMENTAL ASSESSMENT: FACTS AND BENEFITS, 4 (May 25, 2016), [https://unece.org/DAM/env/eia/Publications/2016/Protocol\\_on\\_SEA/1609217\\_UNECE\\_HR.pdf](https://unece.org/DAM/env/eia/Publications/2016/Protocol_on_SEA/1609217_UNECE_HR.pdf) (last visited Nov. 15, 2021).

<sup>207</sup> Kyiv Protocol, *supra* note 7.

<sup>208</sup> *Id.*, Art. 23(3).

<sup>209</sup> United Nations Economic Commission for Europe, *Resource Manual to Support Application of the Protocol on Strategic Environmental Assessment*, 27, ECE/MP.EIA/17 (2012).

<sup>210</sup> Pursuant to Art. 4(2), it is mandatory for plans and programmes in the field of energy that set the framework for future development consent for projects listed in its Annex I, such as nuclear power stations and reactors. This is unlike the position under the Espoo Convention where the activities listed in Appendix I will need to meet the threshold of being ‘likely to cause

administrative provisions” and “subject to preparation and/or adoption by an authority or prepared by an authority for adoption, through formal procedure, by a parliament or government”.<sup>211</sup>

#### **a) Obligation in respect of environmental report**

When it has been established that a given plan or programme falls under the scope of the Protocol, the SEA for that plan or programme starts with scoping.<sup>212</sup> This process identifies those environmental and health issues related to the implementation of the plan or programme that need to be further addressed in the assessment, with a view of capturing all relevant information in the environmental report.<sup>213</sup> Although the Protocol itself does not address this, if significant transboundary effects appear likely, it is recommended that transboundary consultations begin during scoping.<sup>214</sup>

Experts then proceed to analyse the plan or programme for its potential environmental and health effects and propose mitigation measures and alternative planning options.<sup>215</sup> Following this assessment, all relevant findings are reflected in the environmental report. The Kyiv Protocol provides that the report shall “identify, describe and evaluate” the likely significant environmental effects, including the health effects, of implementing the plan or programme and its reasonable alternatives and shall contain such other information specified by the Protocol.<sup>216</sup> This report is one of the key documents that is included in the notification to potentially affected states (see below).

#### **b) Obligation to notify and consult**

Pursuant to the Protocol, the process for transboundary consultation should be initiated “as early as possible” through notification to parties who may be affected by significant transboundary environmental effects, or at their request.<sup>217</sup> Beyond this, the Protocol does not indicate more precisely when notification should take place.<sup>218</sup> The notification shall contain: (i) the draft plan or programme; (ii) the environmental report, including information on its transboundary environmental effects; and (iii) information regarding the decision-making procedure, including an indication of a reasonable timeframe for the transmission of documents.<sup>219</sup>

Consultations must address the likely transboundary effects of implementing the plan or programme and the measures envisaged to prevent, reduce, or mitigate adverse effects. Where potentially affected parties decide to enter into consultations, the Protocol requires that detailed arrangements be in place to ensure that the public and the relevant authorities are given the opportunity to forward their opinions on the draft plan or programme and the environmental report within a reasonable time frame.<sup>220</sup>

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a significant adverse transboundary impact’ before triggering the application of the convention. See discussion in Section III.B.3.a.

<sup>211</sup> Kyiv Protocol, *supra* note 7, Art. 2(5).

<sup>212</sup> *Id.*, Art. 6.

<sup>213</sup> *Id.*, Art. 6(1).

<sup>214</sup> Tea Aulavuo, *Presentation on Protocol on Strategic Environmental Assessment to the Espoo Convention*, in WORKSHOP ON REGIONAL COOPERATION TO ENHANCE TRANSBOUNDARY CONSULTATION ON NUCLEAR POWER DEVELOPMENT IN SOUTHEAST ASIA (2019).

<sup>215</sup> UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE, *supra* note 206, 11.

<sup>216</sup> Kyiv Protocol, *supra* note 7, Annex IV.

<sup>217</sup> Kyiv Protocol, *supra* note 7, Art. 10.

<sup>218</sup> United Nations Economic Commission for Europe, *Simplified Resource Manual to Support Application of the Protocol on Strategic Environmental Assessment*, ¶ 4.5, ECE/MP.EIA/18 (Sept. 9, 2012).

<sup>219</sup> Kyiv Protocol, *supra* note 7, Art. 10(2).

<sup>220</sup> *Id.*, Arts. 10(3), 10(4).

As discussed in the context of the Espoo Convention, transboundary notification and consultations may be arranged on an “as needed” basis or provided for through bilateral/multilateral agreements.<sup>221</sup> The same considerations apply to transboundary SEAs and any such agreements that have been set up for the purposes of the Espoo Convention may be adapted to cover plans and programmes under the Kyiv Protocol.

### *c) Taking due account of the outcome of the SEA in decision-making*

When a state decides to embark on a nuclear power programme, due account must be taken of the results of the SEA and the decision should be shared with the potentially affected states. They should be provided with the final programme (where only the draft was provided during the notification stage), a statement showing how environmental considerations have been integrated into the programme, how the comments received as part of the transboundary process have been taken into account and the reasons for adopting it in light of the information and alternatives considered.<sup>222</sup>

## **3. Case study – SEA of Poland’s nuclear programme**

The experience of Poland in using a SEA during the development of its nuclear programme represents one of the most well-documented examples of a transboundary SEA, as well as one of the few examples of a SEA from the nuclear sector.<sup>223</sup> From the ten states that were invited to participate in cross-border proceedings, seven states ultimately participated in the transboundary consultations for the SEA, where due account of the feedback from their agencies and members of the public was taken.<sup>224</sup> In accordance with the Kyiv Protocol, the relevant decision and the associated statement justifying the decision based on the received feedback were shared with the states.

The Polish experience highlights how the SEA process, through facilitating transboundary consultation, provides an avenue for feedback, which helps to avoid or at least minimise future conflicts and concerns at the later EIA stage for related projects. In doing so, it promotes trust and transparency between states. Such consultations do not necessarily alter national decisions or interfere with state sovereignty.<sup>225</sup>

It also illustrates that transboundary consultations are likely to be time-consuming and require adequate resources. The logistical challenges faced include setting appropriate time frames for feedback from multiple State Parties and handling large amounts of comments in different languages. In this regard, bilateral/multilateral agreements could play a role as potentially useful mechanisms to address, in advance, such practical issues.<sup>226</sup>

While the general parameters of conducting SEAs and the opportunities it provides for transboundary consultation have been discussed in the context of the Kyiv Protocol as shown above, the IAEA normative framework can provide a clearer picture as to how opportunities for transboundary consultation can arise in the specific nuclear context of a state’s national decision to embark on a nuclear power programme.

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<sup>221</sup> See Section III.B.3.d.

<sup>222</sup> Kyiv Protocol, *supra* note 7, Art. 11.

<sup>223</sup> One of the reasons for this is that most states that opted for nuclear energy did so before SEA was required, whether pursuant to international conventions or national legislation.

<sup>224</sup> POLISH NUCLEAR POWER PROGRAMME, WRITTEN SUMMARY OF THE STRATEGIC ENVIRONMENTAL ASSESSMENT RESULTS (2015), <https://www.ym.fi/download/noname/%7B1265F8FE-5B79-4A5A-B774-C95955EBB5FF%7D/106172> (last visited July 18, 2021).

<sup>225</sup> CIL TRANSBOUNDARY CONSULTATION WORKSHOP REPORT, *supra* note 85.

<sup>226</sup> *Id.*

## C. IAEA normative framework

The background to the IAEA normative framework (see Section III.C.1) and the context for the application of this framework—namely, the IAEA Milestones Approach (See Section II) also apply to a state’s national decision to embark on a nuclear power programme. Unlike in the case of the Convention on Nuclear Safety, which provides for consultation in the context of siting, there is no comparable treaty provision that obliges States to undertake transboundary consultation in this context. Instead, support is found in IAEA safety standards and guidelines.

In the context of the IAEA Milestones Approach, the major part of the SEA process is recommended to be done during Phase 1, before the decision is taken to embark on a nuclear power programme.<sup>227</sup> Although SEAs are directed at the plan and programme level, which means that they go beyond the individual nuclear power plants, SEAs and EIAs are linked in the sense that the SEA process at the end of Phase 1 is expected to identify some of the projects that will require an EIA.<sup>228</sup>

### 1. Relevant standards and guidelines

Relevant standards and guidelines take the form of a Safety Guide and guidelines from documents forming part of the IAEA Nuclear Energy Series on building a national position,<sup>229</sup> as well as on SEAs for nuclear power programmes.<sup>230</sup>

#### a) *Specific safety guide on establishing a safety infrastructure for nuclear power programmes*

As discussed earlier, the IAEA Safety Guides provide recommendations and guidance on how to comply with the Safety Requirements, indicating an international consensus on the measures recommended.<sup>231</sup> The Safety Guides present international good practices—and increasingly best practices—to help users achieve high levels of safety.

In the IAEA Specific Safety Guide on establishing a safety infrastructure for a nuclear power programme,<sup>232</sup> transboundary consultation is recommended both in Phase 1 and 2 of the IAEA Milestones Approach. The two relevant actions are as follows: (i) in Phase 1, “[t]he government should begin a dialogue with neighbouring States regarding its projects for establishing a nuclear power programme”,<sup>233</sup> and (ii) in Phase 2, “[t]he government should inform all interested parties regarding the safety implications of the decision on the implementation of a nuclear power programme.”<sup>234</sup> The

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<sup>227</sup> IAEA, *SEA Guidelines*, *supra* note 27, 4.

<sup>228</sup> *Id.* See also Figure 1 above.

<sup>229</sup> IAEA, *Building a National Position*, *supra* note 27.

<sup>230</sup> IAEA, *SEA Guidelines*, *supra* note 27.

<sup>231</sup> See Section III.C.1.

<sup>232</sup> IAEA, *Establishing the Safety Infrastructure*, *supra* note 27.

<sup>233</sup> “Specific considerations should be given to neighbouring States whose interests could be affected by the State’s nuclear power programme, both in normal operation and in the event of an accident. The government should implement a consultation mechanism that would allow neighbouring States to express their views and concerns. Such a process should be continued during all phases of development of the State’s nuclear power programme.” See *id.*, ¶ 2.18.

<sup>234</sup> “The government should inform all interested parties regarding decisions on the implementation of a nuclear power programme, including the long-term national and international commitments to maintain nuclear safety and the necessity of measures such as establishing new organisations, building new national infrastructure and making financial provision for radioactive waste management and spent fuel management. Information should be provided to the public, local governments, committees representing local interests, industry, news media, nongovernmental organisations and neighbouring States.” See *id.*, ¶ 2.89.

completion of these actions is a concrete step towards the full implementation of Requirement 36 under GSR Part 1 discussed in the previous section.<sup>235</sup>

The above provisions clearly support transboundary consultation in the context of a state's national decision to embark on a nuclear power programme. While they recommend that governments implement a consultation mechanism catering for transboundary consultation and information sharing, the recommendations do not extend to the form of such a mechanism.

### **b) Guidelines on building a national position**

The IAEA Nuclear Energy Series No. No. NG-T-3.14 on Building a National Position for a New Nuclear Power Programme recommends that the government develop a policy and process to inform the general public and other stakeholders, such as non-governmental organisations and neighbouring states, about the risks and benefits of nuclear power and to provide them with information regarding decisions on the implementation of a nuclear power programme.<sup>236</sup> Similar guidance can be found in the IAEA Stakeholder Involvement Guidelines that are applicable throughout all phases of the IAEA Milestones Approach, including prior to a state's national decision.<sup>237</sup> The IAEA has since provided guidance on how SEAs can serve as such a "policy and process" to provide for such information sharing (see below).

### **c) Guidelines on SEA for nuclear power programme**

While numerous general guidelines exist on SEAs,<sup>238</sup> the IAEA Nuclear Energy Series No. NG-T-3.17 on Strategic Environmental Assessment for Nuclear Power Programmes: Guidelines (hereafter, IAEA SEA Guidelines) was specifically developed to address nuclear power at a macro scale for the whole programme.<sup>239</sup> Up until the decision to prepare these guidelines, national endeavours for developing nuclear energy that involved SEAs revolved around the preparation of nuclear programmes. This provided the impetus for the development of these guidelines and its focus on the programme level.<sup>240</sup> These endeavours included those undertaken by Poland as well as by the United Arab Emirates.

The IAEA SEA Guidelines recommend early stakeholder engagement. Outside of being early, such engagement should be comprehensive and include local, national, regional and international stakeholders over a continuous period throughout the different stages of the SEA process.<sup>241</sup> Similar to the IAEA EIA Guidelines, the IAEA SEA Guidelines do not prescribe the procedure for the contemplated transboundary consultation nor its parameters. However, unlike the IAEA EIA Guidelines, the SEA Guidelines clearly indicate the necessity for a state to conduct transboundary assessment and consultation in line with the provisions of the Kyiv Protocol. Further, the IAEA SEA Guidelines specifically refer to Article 10 of the Kyiv Protocol regarding the transboundary consultation processes, thereby recognising it as good practice.<sup>242</sup>

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<sup>235</sup> See *id.*, ¶ 2.23.

<sup>236</sup> IAEA, *Building a National Position*, *supra* note 27, ¶ 3.3.

<sup>237</sup> See Section III.C.3.d.

<sup>238</sup> *E.g.*, OECD, *APPLYING STRATEGIC ENVIRONMENTAL ASSESSMENT: GOOD PRACTICE GUIDANCE FOR DEVELOPMENT CO-OPERATION* (2006), [https://read.oecd-ilibrary.org/development/applying-strategic-environmental-assessment\\_9789264026582-en?\\_ga=2.146460148.1127733669.1626833005-1098023184.1626329977#](https://read.oecd-ilibrary.org/development/applying-strategic-environmental-assessment_9789264026582-en?_ga=2.146460148.1127733669.1626833005-1098023184.1626329977#) (last visited July 18, 2021).

<sup>239</sup> IAEA, *SEA Guidelines*, *supra* note 27, 3.

<sup>240</sup> Thomas B. Fischer et al., *Reflecting on the Preparation of Guidelines for Strategic Environmental Assessment (SEA) of Nuclear Power Programmes*, 37:2 *IMPACT ASSESS. PROJ. APPRAIS.* 165, 165 (2019).

<sup>241</sup> IAEA, *SEA Guidelines*, *supra* note 27, 42.

<sup>242</sup> *Id.*, 44.

Overall, in following the IAEA Milestones Approach and addressing the different infrastructure issues such as national position, nuclear safety and stakeholder involvement, the IAEA normative framework provides support for transboundary consultation in the context of a state's national decision.

## V. Interrelationship between the normative bases at the international level

In light of the above discussion on the normative basis for transboundary consultation, under customary international law, the UNECE normative framework and the IAEA normative framework, the question that arises is whether these bases relate to one another and if so, how?

Given that customary international law is binding on all states, the IAEA normative framework must be read in light of customary law obligations. Under customary international law, a State of Origin has a right to engage in activities within its own territory, as well as an obligation to exercise due diligence in preventing significant transboundary environmental harm. A State of Origin may escape legal responsibility if due diligence has been observed.<sup>243</sup>

Within the IAEA normative framework, the Convention on Nuclear Safety is the only legally binding instrument and then again, only binding on contracting parties to that treaty. Since the view that the Convention incorporates safety standards and guidelines has not found much support, the issue that remains is whether these standards and guidelines can be said to be reflective of the degree of due diligence required of a State of Origin.<sup>244</sup>

Under customary international law, it is clear that the obligation to exercise due diligence entails the obligation to conduct an EIA (also possibly an independent customary law obligation), as well as the obligations to notify and consult potentially affected parties. Since the IAEA has a clear mandate to foster scientific and technical cooperation internationally and set safety standards for the global nuclear community “for protection of health and minimisation of danger to life and property [and] to provide for the application of these standards” (emphasis added),<sup>245</sup> the IAEA safety standards (and guidelines applying such standards) are widely regarded as reflective of good, if not, best practices.<sup>246</sup> As such, a State of Origin complying with not only the IAEA safety standards but also guidelines providing for the conduct of an EIA, as well as engaging in notification and consultation with neighbouring states during the siting process is arguably acting with due diligence by following international good or best practices.

What the IAEA standards and guidelines do not provide for is a detailed procedure to govern the process of transboundary consultation, regardless of whether the mechanism in question (facilitating transboundary consultation) is an EIA or a safety assessment. Here, while acknowledging that certain key obligations in the Espoo Convention represent the position under customary international law, many of its detailed provisions do not. However, these provisions are also widely regarded as reflecting best practices in terms of providing a comprehensive procedure for transboundary EIAs within the context of the siting of a nuclear plant.

In terms of SEAs and a state's national decision to embark on a nuclear power programme, the practice of states under customary international law is that there is presently no such obligation to conduct a SEA. While there are clear advantages of conducting a SEA to support a state's national position and indeed, this is what the IAEA advocates, this is currently still an emerging norm under customary

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<sup>243</sup> See Section III.A.3.

<sup>244</sup> See Section III.C.4.

<sup>245</sup> See Section III.C.1.

<sup>246</sup> See Section III.C.1.

international law. There has been a suggestion that due to its links to EIAs, it may be viewed as a way for states to meet their obligations of due diligence.<sup>247</sup>

The IAEA SEA Guidelines clearly support transboundary consultation early in the decision-making process on whether to adopt a nuclear power programme. Similarly, SEAs pursuant to the Kyiv Protocol can facilitate transboundary consultation on a state's national decision to embark on a nuclear power programme, as was the case with Poland. However, as there is no obligation to conduct a SEA under customary international law, this obligation in the Kyiv Protocol only applies to contracting parties. The Kyiv Protocol, like the Espoo Convention in respect of EIAs, serves the specific purpose of setting out a detailed procedure for conducting transboundary SEAs, helping with the implementation of IAEA guidelines in this area.<sup>248</sup>

## VI. Normative basis at the ASEAN level and its relationship to the international level

Having discussed the different normative bases existing at the international level that offer support for transboundary consultation, namely, customary international law, the UNECE normative framework and the IAEA normative framework, this section analyses the normative framework at the ASEAN level with a view to determining (i) whether it provides an additional normative basis for transboundary consultation; and (ii) if so, how such basis relates to those existing at the international level. The focus here is on analysing ASEAN instruments,<sup>249</sup> which for the purposes of this paper, are defined as including both ASEAN legal instruments<sup>250</sup> and other ASEAN instruments. ASEAN instruments include those agreements that have been collectively concluded by ASEAN Member States as well as the range of instruments put out by ASEAN heads of states, ministers, senior officials, officials and other technical experts (who constitute working-level bodies which typically report to senior officials).

While several ASEAN Member States have national EIA and/or SEA frameworks, a region-wide framework on SEA or EIA (that could potentially also support transboundary consultation within the nuclear sector) does not currently exist. Within the nuclear sector in Southeast Asia, there is arguably an ASEAN approach towards nuclear energy governance, which lends additional normative support for transboundary consultation. In essence, this approach has two dimensions which operate to: (i) direct the application of the collective commitment of all ASEAN Member States to the ASEAN Charter (in particular, its purposes and principles) to ASEAN engagement on nuclear-related activities; and (ii) within this broader context, to implement ASEAN's commitment to follow international rules, standards and best practices in the areas of nuclear safety, security, safeguards and non-proliferation.

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<sup>247</sup> See Section IV.A.1.

<sup>248</sup> See Section IV.B.

<sup>249</sup> It should be pointed out that there is no comprehensive definition of the term 'ASEAN instrument'. While the term 'ASEAN Instrument' is used in the ASEAN Charter, the term is not defined. The Charter gives a partial list of treaties, conventions, agreements, concords, declarations, protocols, as well as a catchall category of 'other instruments'. See Davinia Abdul Aziz & Renaud Dehousse, *The Instruments of Governance of ASEAN: An Inventory and Critical Analysis*, NATIONAL UNIVERSITY OF SINGAPORE CENTRE FOR INTERNATIONAL LAW, [https://cil.nus.edu.sg/wp-content/uploads/2016/08/SD\\_Executive-Summary-Aziz-and-Dehousse-formatted.pdf](https://cil.nus.edu.sg/wp-content/uploads/2016/08/SD_Executive-Summary-Aziz-and-Dehousse-formatted.pdf) (last visited Sept. 4, 2021); See Charter of the Association of Southeast Asian Nations, Art. 20(3), Nov. 20, 2007, 2624 U.N.T.S. 223 [hereinafter ASEAN Charter].

<sup>250</sup> The ASEAN Secretariat maintains an online database titled 'ASEAN Legal Instruments' which currently has over 80 instruments. This database focuses on 'legal instruments by which the consent to be bound is expressed through either the signature of the authorised representatives of Member States or the signature is subject to ratification and/or acceptance in accordance with the internal procedures of respective Member States'. *List of Instruments*, ASEAN, <http://agreement.asean.org/> (last visited Mar. 2, 2021).



This section will offer support for this argument and demonstrate how this approach at the ASEAN level also provides normative support for transboundary consultation.

## A. Commitment to the purposes and principles of the ASEAN Charter

One of the key purposes of ASEAN is “to respond effectively, in accordance with the principle of comprehensive security, to all forms of threats, transnational crimes and transboundary challenges”.<sup>251</sup> As drafted, this provision is clearly intended to cover non-traditional threats. Such threats would include transboundary environmental threats.<sup>252</sup> As such, ASEAN Member States, through their commitment to this purpose of ASEAN as set out in the ASEAN Charter, have committed to responding effectively to transboundary environmental threats, including those posed by nuclear power deployment.

In pursuit of the purposes of ASEAN, ASEAN Member States have committed to abiding by certain “fundamental principles” set out in the Charter, as well as those contained in the “declarations, agreements, conventions, concords, treaties and other instruments of ASEAN”.<sup>253</sup> The effect of this commitment, within the context of the ASEAN Approach, is that ASEAN Member States are bound to apply these “fundamental principles” in their engagement with each other on nuclear-related matters, including on the potential transboundary risk(s) posed by the siting of nuclear power plants and/or the national decision to embark on a nuclear power programme.<sup>254</sup>

In light of serious concerns surrounding the risk of transboundary harm associated with the use of nuclear power, it is not surprising that the deployment of nuclear energy within the region is a sensitive issue. Of direct relevance to the issue of transboundary consultation within this context are the principles of enhanced consultations in matters seriously affecting the common interest of ASEAN<sup>255</sup> and support for regular consultations to coordinate views and actions.<sup>256</sup> Given regional concerns and sensitivities, enhanced transboundary consultations, in line with the former principle, are needed to address concerns about the risk of transboundary harm (even if this risk is statistically low)<sup>257</sup> The latter principle not only offers direct support for transboundary consultation but also advocates taking a coordinated ASEAN approach.<sup>258</sup> Other principles such as those relating to good

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<sup>251</sup> ASEAN Charter, *supra* note 249, Art. 1(8).

<sup>252</sup> See Koh Kheng-Lian & Md. Saiful Karim, *The Role of ASEAN in Shaping Regional Environmental Protection*, in ROUTLEDGE HANDBOOK OF THE ENVIRONMENT IN SOUTHEAST ASIA 327 (Philip Hirsch ed., 2016).

<sup>253</sup> ASEAN Charter, *supra* note **Error! Bookmark not defined.**, Art. 2.1. Other such ASEAN instruments include the Treaty of Amity and Cooperation, a key code of conduct and a diplomatic instrument for the promotion of peace and stability in the region as well as other key ASEAN instruments such as the ASEAN Declaration, ASEAN’s founding document and Zone of Peace, Freedom and Neutrality Declaration. See Treaty of Amity and Cooperation in Southeast Asia, Feb. 24, 1976, 1025 U.N.T.S. 297 [hereinafter TAC]; ASEAN Foreign Ministers’ Statement on the Occasion of the 40th Anniversary of the Treaty of Amity and Cooperation in Southeast Asia, ASEAN (July 24, 2016), <https://asean.org/wp-content/uploads/2016/07/Statement-of-the-40th-Anniversary-of-the-TAC-ADOPTED.pdf> (last visited Nov. 29, 2021); ASEAN Declaration (Bangkok Declaration), Aug. 8, 1967, 6 I.L.M. 1233; Zone of Peace, Freedom and Neutrality Declaration, Nov. 27, 1971, <https://cil.nus.edu.sg/wp-content/uploads/2019/02/1971-Zone-of-Peace-Freedom-and-Neutrality-Declaration-1-1.pdf> (last visited Nov. 29, 2021) [hereinafter ZOPFAN]. These instruments call on ASEAN Member States to support regular consultations to coordinate views and actions, strengthen good neighbourliness and cooperation, contribute to strength, solidarity and closer relationships and to do so in a way that upholds international law and adheres to good governance. TAC, Art. 9, 12; ASEAN Declaration, ¶ 7, Arts. 2, 3, 4, 9; ZOPFAN, para 2; and Charter of the Association of Southeast Asian Nations, Arts. 2(h), 2(j).

<sup>254</sup> See Section I.

<sup>255</sup> ASEAN Charter, *supra* note 249, Art. 2(g).

<sup>256</sup> TAC, *supra* note 253, Art. 9.

<sup>257</sup> Also of relevance here is ASEAN Member States’ shared commitment and collective responsibility to maintain regional peace, security and prosperity, another principle espoused by the ASEAN Charter, *supra* note 249, Art. 2(b).

<sup>258</sup> See Section VII; ASEAN, Plan of Action to Strengthen the Implementation of the Treaty on the Southeast Asia Nuclear Weapon-Free Zone (2018 to 2022), ¶ 3(e) (Aug. 4, 2017), <https://asean.org/wp-content/uploads/2018/04/PLAN-OF->

neighbourliness and cooperation,<sup>259</sup> as well as solidarity and closer relationships,<sup>260</sup> are clearly upheld when transboundary consultation is undertaken in good faith. Within the context of this paper and its focus on normative support for transboundary consultation, it is relevant to note that such principles also include adherence to the rule of law and good governance as well as upholding international law (which includes customary international law).<sup>261</sup> The overlap between this principle and the second dimension of the ASEAN approach will be discussed below.

## B. Commitment to follow international rules, standards and practices

Against the broader commitment to the ASEAN Charter and its purposes and principles sits ASEAN's commitment to follow international rules, standards and practices in the area of nuclear safety, security and safeguards and non-proliferation (collectively known as "3Ss"). This commitment to follow international rules, standards and practices overlaps with the commitment to follow the ASEAN Charter, specifically those principles mentioned above in relation to adherence to the rule of law, good governance and upholding international law. Support for this commitment in the area of nuclear safety, safeguards and non-proliferation is evidenced in the Treaty on the Southeast Asia Nuclear Weapon-Free Zone (SEANWFZ Treaty) and its Plan of Action,<sup>262</sup> while support for this commitment in the area of nuclear security is found in statements and instruments produced during the ASEAN Summits, in particular, the 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> ASEAN Summits and the ASEAN Convention on Counter-Terrorism.<sup>263</sup>

Within the context of the 3Ss, nuclear safety is the primary context for transboundary consultation. Undertakings in the SEANWFZ Treaty and its Plan of Action (2018-2022)<sup>264</sup> related to nuclear safety

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[ACTION-TO-STRENGTHEN-THE-IMPLEMENTATION-OF-THE-TREATY-ON-THE-SOUTHEAST-ASIA-NUCLEAR-WEAPON-FREE-ZONE-2018-2022.pdf](#) (last visited Nov. 29, 2021) [hereinafter SEANWFZ Plan of Action].

<sup>259</sup> ASEAN Declaration, *supra* note 253, ¶ 7; *Id.*, Arts. 2, 3, 4, 9.

<sup>260</sup> ZOPFAN, *supra* note 253, para 2; TAC, *supra* note 253, Art. 12.

<sup>261</sup> ASEAN Charter, *supra* note 249, Arts. 2(h) and (j).

<sup>262</sup> Southeast Asian Nuclear-Weapon-Free Zone Treaty, Art. 4, Dec. 15, 1995, 35 I.L.M. 635 [hereinafter SEANWFZ Treaty].

The SEANWFZ Treaty is a legally binding agreement, which was signed by all ASEAN Member States in December 1995 and entered into force in March 1997. *See* SEANWFZ Treaty, Preamble, Art. 4, 5, Dec. 15, 1995, 35 I.L.M. 635. *See* SEANWFZ Plan of Action, *supra* note 258.

<sup>263</sup> During the 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> ASEAN Summits, ASEAN leaders agreed to develop "a coordinated ASEAN approach that would contribute to global undertakings to improve nuclear safety, in cooperation with IAEA [...] as well as promote and uphold IAEA standards of safety and security in the development of nuclear energy for peaceful use." In relation to the 18<sup>th</sup> ASEAN Summit, *see* *Chair's Statement of the 18th ASEAN Summit Jakarta, 7-8 May 2011 "ASEAN Community in a Global Community of Nations"*, ASEAN, ¶ 23 and 24 (May 11, 2011), [https://asean.org/wp-content/uploads/2021/09/Statement\\_18th\\_ASEAN\\_Summit.pdf](https://asean.org/wp-content/uploads/2021/09/Statement_18th_ASEAN_Summit.pdf) (last visited Nov. 29, 2021); in relation to the 19<sup>th</sup> ASEAN Summit, *see* *Bali Declaration on ASEAN Community in a Global Community of Nations "Bali Concord III"*, ASEAN, ¶ A(1)(n) (Nov. 17, 2011), <https://reliefweb.int/sites/reliefweb.int/files/resources/Bali%20Concord%20III.pdf> (last visited Nov. 29, 2021); in relation to the 18<sup>th</sup> ASEAN Summit, *see* *2012 Phnom Penh Declaration on ASEAN: One Community, One Destiny*, ASEAN, ¶ 4 (Apr. 3, 2012), <https://cil.nus.edu.sg/wp-content/uploads/formidable/18/2012-Phnom-Penh-Declaration-on-ASEAN.pdf> (last visited Nov. 29, 2021); *see also* *ASEAN Political-Security Community Blueprint*, ASEAN, ¶ A.1.3.i (May 2012), <https://asean.org/wp-content/uploads/2012/05/ASEAN-APSC-Blueprint-2025.pdf> (last visited Nov. 29, 2021). *See also* ASEAN Convention on Counter Terrorism, Art. 2(1), Jan. 13, 2007, U.N.T.S. I-54629. It is noted that in the ASEAN Convention on Counter-Terrorism, the approach towards defining nuclear terrorism (an aspect of nuclear security) is to do so in terms consistent with international standards on nuclear security, i.e. the convention criminalises as acts of terrorism any of the offences within the scope of international nuclear security conventions. In addition, the Convention also encourages state parties to become parties to terrorism-related treaties including those related to nuclear security. Further, the latest ARF Ha Noi Plan of Action II calls for the ISM on NPd to support the compliance with and implementation by ARF Participants of international treaties on not just non-proliferation and disarmament but also nuclear-security related treaties. *See* *ARF Ha Noi Plan of Action II (2020-2025)*, ASEAN, para 1.4.4 and 1.4.7, <https://aseanregionalforum.asean.org/wp-content/uploads/2020/09/ARF-Ha-Noi-Plan-of-Action-II-2020-2025.pdf> (last visited Nov. 29, 2021).

<sup>264</sup> SEANWFZ Plan of Action, *supra* note 258.

are framed in terms of compliance with, or support for, international rules and standards (which as discussed above includes good or best practices).<sup>265</sup> In particular, Article 4 of the SEANWFZ Treaty requires nuclear energy programmes to be subject to “rigorous nuclear safety assessment[s] conforming to guidelines and standards recommended by the IAEA for the protection of health and minimisation of danger to life and property”. Both the SEANWFZ Treaty and the SEANWFZ Plan of Action call on ASEAN Member States to accede to the Convention on Nuclear Safety, among other international instruments.<sup>266</sup>

In the context of transboundary consultation, this commitment to follow international rules, standards and practices should at a minimum entail: (i) compliance with customary international law; and (ii) joining and implementing key international conventions, where all ASEAN Member States have agreed to do so.<sup>267</sup> The commitment should arguably also encompass the application of the relevant IAEA safety standards and guidelines such as the IAEA Milestones Approach and the safety standards and guidelines discussed above in relation to siting and a state’s national decision. This aspect of the ASEAN approach would also arguably support the adoption of best or good practices set out in the Espoo Convention and Kyiv Protocol.

As can be seen from above, this ASEAN approach to nuclear energy governance is itself inextricably linked to the international normative bases.<sup>268</sup> It follows from the discussion above that the ASEAN approach to nuclear energy governance provides an independent normative basis for transboundary consultation, additional to the normative bases identified at the international level, further strengthening and reinforcing them with support at the regional level. How, then, can this approach be applied in practice to promote transboundary consultation within the region?

## VII. Considerations for ASEAN on ways to further strengthen the overall normative basis

This section focuses on possible options for the way forward for the region, based on an application of the ASEAN approach towards nuclear energy governance. The premise of this section is that there is political agreement within ASEAN on the need to adopt a regional normative framework to facilitate transboundary consultation. These options flow from the paper’s earlier analysis of the normative frameworks existing at both the international and ASEAN levels, and take into consideration the extent to which normative bases at the international level presently apply to ASEAN Member States. As part of the analysis, it will consider what impact such option(s) will have on the overall normative basis for transboundary consultation within the region.

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<sup>265</sup> SEANWFZ Treaty, *supra* note 262, Arts. 4(2)(b), (e).

<sup>266</sup> The other international instruments ASEAN Member States are encouraged to ratify and conclude are the Convention on Early Notification of a Nuclear Accident, Sept. 26, 1986, 1439 U.N.T.S. 275; the Comprehensive Nuclear-Test-Ban Treaty, *opened for signature* Sept. 10, 1996, 35 I.L.M. 1439; and the IAEA, Model Protocol Additional To The Agreement(S) Between State(S) And The International Atomic Energy Agency For The Application Of Safeguards, IAEA Doc. INFC1RC/540 (Sept. 1997) respectively. See paragraphs 1(c) and (d). In addition to these instruments, accession to other international instruments approved by the SEANWFZ Commission is stated as being key to the effective implementation of the SEANWFZ Treaty and ASEAN Member States are called upon to complete accession to such international instruments in the ‘soonest possible time’. It is not clear if the SEANWFZ Executive Committee has recommended such a list of other international instruments to the SEANWFZ Commission pursuant to paragraph 1(g) of the SEANWFZ Plan of Action.

<sup>267</sup> For example, ASEAN Member States through the adoption and endorsement of the SEANWFZ Plan of Action have agreed to encourage accession to the Convention on Nuclear Safety. SEANWFZ Plan of Action, *supra* note 258, 1(b).

<sup>268</sup> Specifically, through the commitment to the ASEAN Charter including the principle of adhering to good governance and upholding international law enshrined in the ASEAN Charter and the commitment to follow international rules, standards, and practices in the area of nuclear safety and others.

The focus in this section is on transboundary consultation in respect of the siting of a nuclear power plant, rather than on a state's national decision to embark on a nuclear power programme. This is because the lack of international practice with respect to SEAs makes it premature to advocate a regional approach for SEAs, notwithstanding the clear benefits that SEAs hold from the viewpoint of sustainable development.

#### **A. Applicability of normative frameworks at the international level**

As discussed at the start of this paper, customary international law obligations are binding on all states including ASEAN Member States. As for the IAEA normative framework applicable to transboundary consultation, a distinction has to be made in relation to binding conventions such as the Convention on Nuclear Safety and the other non-binding standards and guidelines. At present, only six ASEAN Member States are parties to the Convention on Nuclear Safety<sup>269</sup> (which as discussed earlier, in the context of siting a nuclear power plant, requires contracting parties to ensure that there are procedures for consulting other contracting parties in the "vicinity" of the proposed nuclear power plant in certain circumstances). However, the majority of the IAEA standards and guidelines that support transboundary consultation are not binding per se (see Section III.C.1), except arguably insofar as the 'prevention principle', being a customary law obligation, requires states to comply with such standards and/or guidelines as part of their due diligence obligation (see Section V). In the case of the UNECE normative framework, none of the ASEAN Member States are presently parties to the Espoo Convention, nor have there been indications that any of them intend to become parties to the Espoo Convention when it is possible for other members of the United Nations to do so.

#### **B. Possible ways forward for ASEAN based on the application of the ASEAN Approach**

Regarding possible options for ASEAN's way forward based on an application of the ASEAN approach towards nuclear energy governance, this section will focus on options flowing from the paper's earlier analysis of the normative frameworks existing at both the international and ASEAN levels. These options fall under two main frameworks relating to the SEANWFZ Treaty and the Espoo Convention. The section will briefly describe these options and offer initial observations on the feasibility of each of them in light of the challenges and opportunities facing ASEAN.

In implementing the ASEAN approach, specifically the commitment to follow international rules, standards and practices, it is not entirely clear-cut what effective implementation of this commitment would look like. Apart from obvious obligations such as compliance with customary international law, things become less clear when one turns to 'rules' (apart from customary international law, this term could also encompass treaties or conventions), 'standards' and 'practices' - where the ones to 'follow' are not necessarily 'obvious,' given the lack of ASEAN pronouncement in this regard.<sup>270</sup>

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<sup>269</sup> Cambodia, Indonesia, Myanmar, Singapore, Thailand and Vietnam are the six ASEAN Member States that are parties to the Convention on Nuclear Safety. See ESI-CIL Nuclear Governance Project, PARTICIPATION BY ASEAN MEMBER STATES IN INTERNATIONAL TREATIES RELATING TO NUCLEAR SAFETY, SECURITY, LIABILITY & ENVIRONMENT (June 2019), <https://cil.nus.edu.sg/wp-content/uploads/2019/11/Participation-of-ASEAN-Member-States-in-International-Treaties-Relating-to-Nuclear-SSL-Env-28.6.19.pdf> (last visited Nov. 22, 2021).

<sup>270</sup> In this regard, as mentioned above, the Convention on Nuclear Safety has been expressly identified in the SEANWFZ Plan of Action as treaty where all state parties to the SEANWFZ Treaty (i.e. all ASEAN Member States) are encouraged to accede to the Convention making it one of the "rules" ASEAN Member States should follow. SEANWFZ Plan of Action, *supra* note 258, 1(b).

The challenge is to be able to forge a regional consensus on what this commitment covers. It should be remembered, as stated earlier, that this commitment to follow international rules, standards and practices sits within the broader commitment to the ASEAN Charter. It follows that ASEAN Member States, in implementing the commitment to follow international rules, standards and practices, will have to do so in a way that upholds their overarching collective commitment to the ASEAN Charter as discussed above.

This would include but not be limited to, for example, regular consultation and cooperation to coordinate views to clarify and agree (i) which applicable rules, standards and practices; and (ii) what effective implementation of such rules, standards and practices would entail. Throughout this process, states should conduct such consultations in a manner that promotes the fundamental principles of ASEAN engagement, such as those relating to promoting good neighbourliness, solidarity and closer relationships.

## **1. Options under the framework related to the Espoo Convention**

The first option is for ASEAN Member States to become parties (or adhere) to the Espoo Convention when this becomes possible.<sup>271</sup> As noted above, none of the ASEAN Member States are presently parties to the Espoo Convention. On the surface, this “adherence option” would appear to present a ‘ready-made’ solution for the region, as the Espoo Convention clearly sets out when the EIA obligation is triggered, comprehensively sets out an EIA procedure (including providing for transboundary consultation), has specific guidance tailored for nuclear energy-related activities and provides compliance mechanisms to facilitate implementation. As discussed earlier, the Convention potentially applies to all (not just nuclear-related) activities within its scope.

Here, it is pertinent to note that the closest ASEAN has ever come to adopting a regional commitment to undertake EIAs for projects is within the context of an ASEAN environmental agreement.<sup>272</sup> Like the Espoo Convention, this was a general obligation to undertake an EIA for all projects, which may significantly affect the natural environment. More than 30 years have passed since this agreement was open for ratification and it has yet to enter into force. Since then, there has not been any other legally binding ASEAN instrument dealing with EIAs. As such, ASEAN-wide support for this option seems unlikely. Furthermore, from the perspective of ASEAN Member States, becoming parties to a treaty where the large majority of parties are geographically distant from Southeast Asia would also make little sense, as the risk of actual transboundary harm is likely to be lower given the geographical distance.

A variation of this option would be to consider adapting the principles in the Espoo Convention specifically for an ASEAN agreement on transboundary EIAs to govern nuclear energy-related activities. This “adapted option” was taken in the case of the Protocol on Environmental Impact Assessment in a Transboundary Context to the Tehran Convention.<sup>273</sup> While not specific to nuclear, this protocol was adapted from the Espoo Convention for the purposes of environmental protection in the Caspian Sea. Given ASEAN’s general lack of appetite for legally binding instruments, this option

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<sup>271</sup> See Section III.B.1.

<sup>272</sup> ASEAN Agreement to Conserve Nature and Natural Resources, Art. 14 (July 9, 1985), <http://agreement.asean.org/media/download/20161129035620.pdf> (last visited Nov. 22, 2021).

<sup>273</sup> Protocol on Environmental Impact Assessment in a Transboundary Context to the Framework Convention for the Protection of the Marine Environment of the Caspian Sea, (July 20, 2018), [https://tehranconvention.org/system/files/tc-interim-secretariat/protocol\\_on\\_environmental\\_impact\\_assessment\\_in\\_a\\_transboundary\\_context\\_en-2.pdf](https://tehranconvention.org/system/files/tc-interim-secretariat/protocol_on_environmental_impact_assessment_in_a_transboundary_context_en-2.pdf) (last visited Nov. 22, 2021).

also runs the risk of not finding much support, notwithstanding its restricted focus on nuclear-energy related activities.

## 2. Options under the framework related to the SEANWFZ Treaty

As discussed above, pursuant to Article 4 of the SEANWFZ Treaty, ASEAN Member States have made a legally binding commitment to undertake a nuclear safety assessment conforming to “IAEA standards and guidelines” prior to embarking on a “peaceful nuclear energy programme”. Pursuant to this option, ASEAN would work towards an agreed interpretation of Article 4 – one that would make clear that Article 4 incorporates by reference IAEA standards and guidelines facilitating transboundary consultation within the context of siting and identifies those standards and guidelines. The significance of this “interpretation option” is that such IAEA standards and guidelines then become part of the SEANWFZ Treaty (applying to all ASEAN Member States), a treaty with robust compliance mechanisms.

However, the difficulty with this option is that, as discussed above, the majority of the IAEA standards and guidelines that support transboundary consultation are not binding per se.<sup>274</sup> Incorporating them by reference into the SEANWFZ Agreement would have the effect of transforming these standards and guidelines into legally binding obligations, an outcome that many, if not all ASEAN Member States are likely to be uncomfortable with. Should this option be adopted, the position pursuant to the SEANWFZ Agreement would be more onerous than under the IAEA normative framework. Another key drawback of this option is that as discussed earlier, the relevant IAEA standards and guidelines themselves do not set out a mechanism or standards for transboundary consultation. Furthermore, while it is true that the SEANWFZ Treaty offers potentially robust compliance mechanisms, it should also be noted that these mechanisms have not been relied upon in practice to secure compliance.<sup>275</sup>

A variation of this option would be for ASEAN Member States to work together to proactively implement Article 4 to encompass transboundary consultation in the next SEANWFZ Plan of Action, which is a non-binding ASEAN instrument. As part of this “implementation option”, ASEAN Member States could take the opportunity to emphasise that the Convention on Nuclear Safety provides a strong legal basis for such consultation and that ASEAN Member States who have yet to become parties to this treaty should do so as a matter of priority.<sup>276</sup> Pursuant to this option, there would be clarity on when the obligation to engage in transboundary consultation arises (presently absent in the Convention). This option would also provide for the actual consultation mechanism, which may or may not take the form of a transboundary EIA.<sup>277</sup>

This option would accord with the ASEAN Way, under which “consensus and non-binding plans, avoiding treaties and legalistic rules”<sup>278</sup> remain a key norm, especially for matters outside the economic domain. Such implementation could over time form part of the “regional nuclear safety

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<sup>274</sup> See Section III.C.1.

<sup>275</sup> While the SEANWFZ Treaty offers a potentially robust legal framework for nuclear safety (in that, it has relatively strong compliance and dispute-resolution mechanisms), this treaty does not appear to have been enforced in practice. Even when historically there might have been an opportunity to invoke the enforcement of a provision, ASEAN Member States ultimately sought not to rely on the SEANWFZ Treaty provisions. Based on information from an interview with a former ASEAN Secretariat Official within the ASEAN Political and Security Community Department on Nov. 10, 2017.

<sup>276</sup> Brunei, Laos, Malaysia and the Philippines being the four ASEAN Member States that are not parties to the Convention on Nuclear Safety. See ESI-CIL Nuclear Governance Project, PARTICIPATION BY ASEAN MEMBER STATES IN INTERNATIONAL TREATIES RELATING TO NUCLEAR SAFETY, SECURITY, LIABILITY & ENVIRONMENT (June 2019), <https://cil.nus.edu.sg/wp-content/uploads/2019/11/Participation-of-ASEAN-Member-States-in-International-Treaties-Relating-to-Nuclear-SSL-Env-28.6.19.pdf> (last visited Nov. 29, 2021).

<sup>277</sup> It may instead entail a process by which parties share information and consult, including on any information relating to environmental and safety assessments conducted by the State of Origin.

<sup>278</sup> See Kheng-Lian & Karim, *supra* note 252, at 316.

regime” referred to in the SEANWFZ Plan of Action, which contemplates the “eventual development of a regional nuclear safety regime to regulate and oversee the safety assessment requirements for those States Parties which have embarked on peaceful nuclear energy programmes, in accordance with Article 4 of the SEANWFZ Treaty”.<sup>279</sup>

### 3. Evaluation of the Options

As can be seen from the discussion above, each of the above options has its strengths as well as drawbacks. Of the options considered, the “implementation option” under the SEANWFZ Treaty may end up being the preferred option, in light of ASEAN’s lack of appetite for legally binding instruments and the lack of political will to embrace a region-wide transboundary EIA framework. The question that then remains is what would be needed to facilitate the effective implementation of this option?

A common criticism levelled at ASEAN is that it is a ‘talk shop’ where meetings and agreements often do not translate into real progress.<sup>280</sup> To address the issue of effective implementation and compliance, ASEAN will need to ensure that all its Member States have the support they need to be able to do so. ASEAN will need to invest resources to identify and provide the support needed by the respective ASEAN Member States, which is likely to differ across the States in view of the different stages of development. Such support would include capacity and institutional building and possibly legislative assistance, should States choose to implement this option legislatively at a national level. Another important consideration is the scope this option holds, in terms of providing for monitoring, compliance and/or dispute resolution mechanisms, to encourage effective implementation (typically more common in legally binding instruments).<sup>281</sup> Pursuant to this option, ASEAN could also consider providing for its own peer-review mechanism to encourage compliance, in the spirit of what the Convention of Nuclear Safety provides for.<sup>282</sup>

Regardless of which option is chosen in the final analysis, having such a regional approach towards transboundary consultation, even if it is a ‘soft-law (non-legally-binding) option’, will further strengthen the overall normative basis for transboundary consultation within the region. Outside of a regional approach, it should be pointed out that it remains open to ASEAN Member States to conclude bilateral or multilateral agreements with each other providing for transboundary consultation, adding yet another layer of normative support.

## VIII. Conclusion

At the international level, there is strong normative support for transboundary consultation within the context of siting a nuclear power plant. All three normative bases - customary international law, the UNECE normative framework (Espoo Convention) and the IAEA normative framework – collectively

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<sup>279</sup> SEANWFZ Plan of Action, *supra* note 258, ¶ 1(i).

<sup>280</sup> See for example, Takashi Terada, *ASEAN’s talk shop function and US engagement*, EAST ASIA FORUM (Aug. 10, 2011), <https://www.eastasiaforum.org/2011/08/10/asean-s-talk-shop-function-and-us-engagement/> (last visited Nov. 22, 2021).

<sup>281</sup> In general, it would appear that ASEAN Member States have been seeking peaceful solutions to disputes with one another as well as with non-ASEAN States through “bilateral negotiation as well as third-party arbitration and adjudication. Where the latter avenue is concerned, ASEAN countries have pursued settlement through international bodies, not through ASEAN just yet”. See Seng Tan, *Not Quite Beyond the ‘ASEAN Way’? Southeast Asia’s Evolution to Rules-based Management of Intra-ASEAN Differences*, in ASEAN @ 50 VOLUME 4: BUILDING ASEAN COMMUNITY: POLITICAL-SECURITY AND SOCIO-CULTURAL REFLECTIONS 74, 82 (Aileen Baviera & Larry Maramis eds., 2017), [https://www.eria.org/ASEAN\\_at\\_50\\_4A.5\\_Tan\\_final.pdf](https://www.eria.org/ASEAN_at_50_4A.5_Tan_final.pdf) (last visited Nov. 22, 2021); See Protocol to the ASEAN Charter on Dispute Settlement Mechanisms, ASEAN (2010), <http://agreement.asean.org/media/download/20200128121018.pdf> (last visited Nov. 22, 2021).

<sup>282</sup> See Section III.C.2.

provide support, with EIAs and safety assessments being the implementing mechanisms. Within the context of a state's national decision, there is normative support for transboundary consultation in the form of the UNECE normative framework (Kyiv Protocol) and the IAEA normative framework, but not customary international law. Given that there is more normative support for siting than for a national decision to embark on a nuclear power programme, it would make sense for ASEAN to focus on building on the normative support for siting.

The international normative bases that presently apply within ASEAN are customary international law and the IAEA normative framework. In the case of the IAEA normative framework, the Convention on Nuclear Safety offers the only "hard-law" or legally binding support. However, this support is somewhat eroded by the fact that not all ASEAN Member States have acceded to it. As far as the UNECE normative framework is concerned, it applies only insofar as it represents best, if not, good practices. In these circumstances, the ASEAN approach towards nuclear energy governance, through its commitments to the purposes and principles of the ASEAN Charter, provides an independent normative basis, which helps to strengthen and reinforce the applicable international normative bases, making the case for transboundary consultation in the context of siting stronger.

In accordance with the ASEAN approach, ASEAN Member States should work to develop and adopt a coordinated or common approach within the region towards transboundary consultation. Adopting such an approach can in turn further strengthen the overall normative basis for transboundary consultation, namely, the normative bases at both international and ASEAN levels taken as a whole. Of the options discussed in relation to the way forward, the "implementation option" stands out as being a realistic starting point for a region not accustomed to 'voluntary' transboundary consultation. It also takes into consideration ASEAN's discomfort with legally binding instruments, the lack of political will to embrace a region-wide transboundary EIA framework and the need for capacity and institutional building across the region. However, the establishment of monitoring, compliance and/or dispute resolution mechanisms to increase the chances of effective implementation may prove challenging under this option.

At the end of the day, whether or not ASEAN succeeds in forging an ASEAN consensus on transboundary consultation and agrees on an option for reflecting this consensus will depend on whether it obtains the buy-in of its nuclear front-runner states. This buy-in will hinge on their willingness to recognise and accept that when dealing with transboundary challenges posed by nuclear power development, the ASEAN approach is to promote transboundary consultation. Embarking states should view this process as a win-win endeavour – one that enables the embarking state to make a well-informed decision based on feedback from all relevant stakeholders (including neighbouring states), as well as one that builds confidence, good neighbourliness as well as solidarity and closer relationships with neighbouring states. Given that the ultimate decision on siting will rest with the embarking state, this process of engagement should not be viewed with suspicion as it does not in any way jeopardise the principles of sovereignty and non-interference – principles also enshrined in the ASEAN Charter.