

**Implementing Strategic Environmental Impact Assessment in Japan**

**From the Perspective of Solar PV Projects**

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## **Abstract**

Discussions regarding the mitigation of global warming and climate change currently often start from how to promptly increase the capacity of renewable energy at a large scale. As the “1.5 Degrees Celsius Goal” has become the de facto standard, the impression is that countries are rushing toward achieving their numerical targets for renewable energy capacity. This situation itself is indeed a positive direction, as countries should each responsibly contribute to mitigating the global issue. However as renewable energy projects have already been demonstrated widely, there does not seem to be much discussion on reviewing the project procedures, especially the requirements of environmental impact assessment.

Global warming and climate change are issues which greatly impact the environment. This paper emphasises that it would be ironic if other aspects of the environment are affected by putting emphasis on only mitigating this environmental issue. Thorough assessment and consideration regarding its impact to other aspects of the environment should also be considered, and this should be ensured by regulation and policy.

This paper analyses the Environmental Impact Assessment (EIA) Regulations in Japan and discusses upon the positive aspects of conducting Strategic Environmental Impact Assessment (SEA) with a focus on solar PV projects.

Based on analysis on the current EIA regulations in Japan, this paper suggests that the Central Government of Japan should mandate all Prefectures (Local Governments) to establish SEA regulations reflecting the Prefecture's features and situations. At the initial stage of implementing SEA, criteria for projects to be subject to SEA would be set instead of conducting "EIA screening." This follows the environmental impact assessment structures of Tokyo Prefecture and Saitama Prefecture which is interpreted to be a type of SEA but without "EIA screening." This paper however suggests including the option to request for a SEA in order to cover projects of small scale but with potential impact toward the environment.

The implementation of SEA would not only ensure stricter assessments of potential environmental impacts but would also benefit business planners by saving costs as they could focus on projects which have higher confidence in implementation. This is, as SEA recommended in this paper includes considerations toward social and economic aspects as well. By conducting SEA first, the quality and efficiency of "programme-based EIA" which business planners would take place could also be improved. Businesses could focus on evaluating the impacts which may be caused by their specific plan and technology they intend to utilise. This may also enable drafting of more detailed and precise mitigation strategies.

*Keywords: Environmental Impact Assessment (EIA), Strategic Environmental Impact*

*Assessment (SEA), Strategic Environmental Assessment, EIA Act, EIA Ordinance, Solar PV*

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## 1. Introduction

Discussions regarding the mitigation of global warming and climate change currently often start from how to promptly increase the capacity of renewable energy at a large scale. All member states of the Conference of the Parties (COP) each have their Nationally Determined Contributions (NDCs) submitted, and every country is making effort to commit to their targets. This indeed, is a significantly important attitude and all countries should be committed to their responsibilities in order to mitigate the globally-shared issue. However as the “1.5 Degrees Celsius Goal” has become the de facto standard, the impression is that countries are rushing toward achieving their numerical targets for renewable energy capacity. As renewable energy projects are demonstrated widely, there does not seem to be much discussion on reviewing the required processes for project implementation. However with the vast increase of renewable energy project; which itself is of course a positive movement, there is a need for more attention to be brought to its environmental impacts. Global warming and climate change are issues which greatly impact the environment. It would be ironic if other aspects of the environment are affected by putting emphasis on only mitigating this environmental issue. Thorough assessment and consideration regarding its impact to other aspects of the environment should also be considered, and this should be ensured by the regulation and policy environment. This paper focuses on the Environmental

Impact Assessment Regulations in Japan and discusses upon the positive aspects of conducting Strategic Environmental Impact Assessment.

## **2. Environmental Impact Assessment in Japan**

### **2.1. The Environmental Impact Assessment Act**

In Japan, Environmental Impact Assessment (EIA) is conducted based on the “Environmental Impact Assessment Act (Ministry of the Environment, Government of Japan, 2023).” Regulation considering EIA had been present from before however as the currently applicable “Environmental Impact Assessment Act” had been amended in 2011 (fully enforced in 2013) it is considered to cover relatively recently emerged issues concerning impacts toward the environment (Ministry of the Environment, Government of Japan, “環境アセスメントガイド、1-2 我が国の環境アセスメント制度 [*Environmental Assessment Guide, 1-2 Our Country’s Environmental Assessment System*],” n.d.). However except for several types of projects, the scale of the project where EIA would be applicable is specified (Ministry of the Environment, Government of Japan, 2023). Regarding power plants, besides nuclear power plants in which projects of all scale is subject to EIA, hydraulic, thermal, geothermal, solar battery, and wind power all have output capacities specified; not all scales require EIA. There are two classifications of the scale of the project, in which a “class-1

project” would always require EIA, and whether EIA would be required would be judged per project for the “class-2 project” category.

According to Aida (2019), member of the Environmental Impact Assessment Division, Minister’s Secretariat, Ministry of the Environment, Government of Japan, the procedures regarding Environmental Impact Assessment in Japan is structured based on the assumption that business operators would be considerate of the environment regardless of being subject to EIA or not. Therefore, most of the projects subject to EIA in reality are public projects, and business operators are encouraged to voluntarily take effort in environmental preservation and information disclosure. Aida (2019) also emphasises that the current EIA Act is not a law which restricts actions but in which sets the EIA procedures. Therefore, even if there are effects toward the environment caused by the project, there is no law enforcement to suspend the project (Aida, 2019). Aida (2019) raises that addressing this point, it is important for businesses to communicate with stakeholders throughout the EIA process and gain understanding and approval from society regarding the project.

As the EIA Act does not cover all projects (even if the project is applicable, EIA may not be required depending on the project size/ scale), in Japan, all prefectures have ordinances on EIA (Ministry of the Environment, Government of Japan, “環境アセスメントガイド”、*4-1 地方公共団体の環境アセスメント制度* [*Environmental Assessment Guide, 4-1 Environmental Assessment Systems by Local Governments*],” n.d.).

## 2.2. Environmental Impact Assessment Ordinances

In Japan, local governments also have their own environmental impact assessment (EIA) systems and all prefectures have regulations (ordinances) regarding EIA (Ministry of the Environment, Government of Japan, “環境アセスメントガイド、4-1 地方公共団体の環境アセスメント制度 [*Environmental Assessment Guide, 4-1 Environmental Assessment Systems by Local Governments*],” n.d.). The Environmental Impact Assessment Division, Minister’s Secretariat, Ministry of the Environment, Government of Japan (n.d.) raises that local governments having their own structures for EIA is very important for the preservation of the environment in local areas. However as they raise that it would be a burden for businesses if they would have to follow two EIA procedures regulated by the EIA Act and Ordinances, businesses are only required to complete either of the procedures. If the project is subject to the EIA Act, businesses would need to follow the procedure regulated in this Law only, and EIA Ordinances cannot be enforced. On the other hand, if the project is not within the scope of the EIA Act, EIA could be demanded based on Ordinances. In addition to this, regardless of whether the project is subject to the EIA procedure by Law or Ordinance, assessments of aspects other than the environmental categories required by Law; such as regarding the community and cultural assets could be regulated by Ordinances (Ministry of the Environment, Government of Japan, “環境アセスメントガイド、4-1 地方公共団体の



環境アセスメント制度 [Environmental Assessment Guide, 4-1 Environmental Assessment Systems by Local Governments],” n.d.).

### **3. Strategic Environmental Impact Assessment (SEA)**

In this paper, Strategic Environmental Impact Assessment (SEA) is defined as environmental impact assessment which is conducted at the stage of policymaking or at the early stage of planning the project (Masuzawa, 2022). Importantly in addition to this basis, the possible conclusion based on the assessment should include the possibility of not proceeding with the project plan which is referred to as the “Zero Option (Nohara, 2013).”

#### **3.1. Situation of SEA in Japan**

In Japan, SEA as a term is not specifically mentioned in the EIA Act. The content of the EIA Act had been partially revised in 2011, and some scholars view this to be a step closer to SEA. Meanwhile at the Regional level (local governments), Tokyo Prefecture and Saitama Prefecture have been conducting environmental impact assessment in a framework similar to SEA (Tanaka, 2021).

#### **3.2. The Revision of the EIA Act in 2011**

The EIA Act was revised in 2011, requiring “Primary Environmental Impact Consideration, Impact Mitigation Reporting” for projects subject to EIA by the Law (Ministry of the Environment, Government of Japan, 2012). The revision was made, in

regards to the rising demand for SEA, and included such as procedures for conducting EIA at the point of project planning, and procedures on reporting and disclosing such as mitigation plans for environmental preservation (Yamashita, 2016).

### **3.3. Discussions on the Classification of the Revised EIA Procedure**

There are varied views among scholars regarding whether the new requirement would be interpreted as an implementation of SEA at the national level or an additional procedure to the existing EIA procedure. According to Tanaka (2021) there are three stages where EIA could be conducted in a project, which is at the “policy stage,” “planning stage,” and the “programme stage.” EIA conducted at the “policy” and “planning” stages which are the early stages of the project, would be considered SEA (Tanaka, 2021). EIA conducted at the “programme stage” is called “programme assessment (EIA)” which is what was required by the Act before its revision (Tanaka, 2021 & Yamashita, 2016). In this paper, “programme assessment (EIA)” would be stated as “programme-based EIA.” According to Tanaka (2021), the EIA procedure of “Primary Environmental Impact Consideration, Impact Mitigation Reporting” required by the revised version of the EIA Act covers the “planning stage” in addition to the “programme stage” which had been addressed by the previous version of the regulation. SEA is environmental impact assessment conducted at the “policy” and “planning” stages of a project (Tanaka, 2021). Therefore the new requirement now partially covers the earlier stages of a project, which is considered to be a part of SEA. Yet, as the assessment is

not conducted at the “policy” stage where there is the possibility of the project not being conducted at all, it may not comply with the definition of SEA, defined in this paper.

Tsuji (2021) raises that although the project location is evaluated based on EIA, the current system based on the EIA Act could not be considered as SEA. This is, as SEA would be assessment conducted in deciding whether the project would be taken place or not. Yet he also raises that the interpretation of whether the current system is a form of SEA would depend on how SEA is defined. Masuzawa (2023) who defines SEA as EIA conducted at an early stage of decision of “policy,” “plan,” or “programme,” states that many scholars view that the revision in which the businesses conduct assessments at the stage of deciding where the project should be based, is a “programme-based EIA” conducted at an earlier stage rather than a SEA process.

As this paper defines SEA as the environmental impact assessment which includes “the option of not allowing the project to be taken place at all (Nohara, 2013),” the requirements added in the 2011 revision would not be classified as SEA. However, the nature of policymaking is that policy frameworks need to be adapted to each country’s situation. Therefore as scholars suggest, this revision to the EIA Act was a significant step toward requiring EIA at an earlier stage of the project, being closer to SEA.

#### **4. Analysis of the Current EIA System in Japan**

Interpretations by scholars regarding whether if the current EIA Act would be considered to be SEA or not, had been discussed in the previous section. However this paper does not consider that the National Level Regulations was designed to follow the EIA (programme assessment) procedure instead of SEA. Kayano (2024a) states that the changing dynamics of the renewable energy industry is a factor which needs to be considered when discussing upon the current EIA structure. Kayano (2024a) explains that the renewable energy market has become a “highly competitive market,” from what had been in reality very close to a “public utility project.” The EIA system in Japan had been established assuming “public utility projects.” Power plants were subject to EIA from the establishment of EIA systems, however at that time they were subject to local monopoly by the former general electricity utility companies. Therefore the project was in reality very close to a “public utility project,” and there was also enough funding for conducting assessments as the electricity industry had the “fully distributed cost method” applied (Kayano, 2024a). Kayano (2024a) argues that the current EIA system (project assessment) does not suit the highly competitive renewable energy market, and issues are raised due to the nature of project assessments itself being hard to thoroughly consider natural and social values specific to local areas.

The EIA Act was established based on having EIA Ordinances (Tsuji, 2021). Prior to the EIA Act, EIA was conducted by local governments through local government orders and

ordinances. Therefore, the Act even clearly defines the relationship with EIA Ordinances and in which cases either should be followed. Ordinances could be established for project scales and also types of projects that are not within the scope of the EIA Act. Therefore the Ordinances are established if there is the need for the Prefecture to cover such as project types and scales which are not covered by the Act. It could be said that Japan having 47 Prefectures and diverse environmental conditions per Prefecture, has established a system where EIA would be ensured by the Central Government (National level) and has regulations reflecting the Prefecture's features.

## **5. Environmental Impact Assessment for Solar PV Projects in Japan**

In Japan, although SEA is not fully implemented structures for ensuring environmental impacts are assessed have been developed at both the National and Regional levels. At the Regional level (Local Governments), there have also been cases where social and economic considerations as well as local stakeholder engagement have been incorporated as part of the required procedure for initiating new projects.

In recent years, there have been growing discussions and movements toward establishing new ordinances regarding renewable energy projects (mainly solar PV). The capacity of solar PV outstands other types of renewable energy sources, and with its demonstrated practices, the target set for the 2030 energy mix is also the highest among the

included five renewable energy sources which are solar PV, wind energy, hydro energy, geothermal energy, and biomass energy (Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry, Government of Japan, 2024). In the 2030 energy mix, the target set for solar PV is 14 to 16 percent out of the target for overall renewable energy 36 to 38 percent to be among the overall energy capacity (Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry, Government of Japan, 2024). Large-scale implementation of solar PV power plants have been causing issues such as sediment outflow, affecting the scenery, and the ecology of animals and plants (Aida, 2019). Therefore, some local governments have established Ordinances specifically for requiring EIA for wider scales of solar PV power plants and solar PV installed facilities (Aida, 2019 & Study Group on the Fundamental Perspective Regarding Environmental Impact Assessment for such as Solar PV Facilities, 2019). As of the Study Group on the Fundamental Perspective Regarding Environmental Impact Assessment for such as Solar PV Facilities's report in 2019, five Prefectures (Yamagata, Nagano, Shizuoka, Yamaguchi, and Oita) and five cities (Sendai, Hamamatsu, Kobe, Okayama, and Fukuoka) had Ordinances which required EIA for solar PV projects in which most set the scale for over 50ha (Study Group on the Fundamental Perspective Regarding Environmental Impact Assessment for such as Solar PV Facilities, 2019). As of December 2018, 25 projects went through the EIA process based on Ordinances.

The Study Group on the Fundamental Perspective Regarding Environmental Impact Assessment for such as Solar PV Facilities (2019) raises in their report that one of the features of Ordinances by local governments is that there are cases where there are regulations set considering impacts of solar PV projects, other than the environmental impacts. For example, Hyogo Prefecture and Wakayama Prefecture do not designate original scale boundaries for requiring of EIA for solar PV projects. However, they have Ordinances which mandate such as complying with facility standards and providing explanations toward stakeholders when deploying solar PV projects.

There are also some Prefectures which have their own environmental impact assessment frameworks, which could be interpreted as SEA (Tanaka, 2016). Tokyo Prefecture and Saitama Prefecture have been conducting environmental impact assessments which align with the idea of SEA. However it does not completely follow the framework of SEA as the “screening” procedure is not included in the Prefectures’ versions of SEA (Tanaka, 2016). As defined by the European Union (2024), the “screening process” of SEA refers to the process of deciding whether to conduct SEA or not. Tanaka (2016) raises that there are both concerns and positive aspects regarding their procedural frameworks. Both Prefectures have designated the types of projects and scales to be subject to the assessment. This holds the possibility of not being able to recognise small scale activities which could cause significant impact to the environment. Yet he adds that the Prefectures have been able to implement a framework to

conduct SEA in an efficient way. Meanwhile, Tanaka (2016) also raises that conducting environmental impact assessment from earlier stages on project planning is beneficial, as environmental considerations could be incorporated and several project plans could be suggested.

## **6. Policy Recommendation**

Policy frameworks need to be adapted to the country's situation when implemented as regulations and policies. This paper initially intended to suggest that SEA should be implemented at the National level. This paper still suggests that SEA should be implemented in order to thoroughly assess the environmental impacts, as it assesses impacts at the stage where there is the option to cancel or relocate the project. However after analysing the current situation, it may not always be the most effective or efficient to implement SEA at the National level, in the case of all countries. In Japan's case, the EIA Act (National level) had been established with consideration toward Ordinances which had existed prior to the Act. Therefore, in Japan's case the establishment of environmental impact assessment procedures did not arise from the discussion of what type of procedural framework regulations the National level regulation should be based on; SEA and/ or EIA. With the EIA Act, the assessing of potential impacts toward the environment was intended to be ensured by regulating EIA procedures and boundaries at the National level, but most likely with the



assumption that Ordinances would be continued or established in order to reflect situations which are specific to each Prefecture. Yanagi (2011) (Masuzawa, 2023) also argues that Japan should aim for a “local government-led SEA.”

This paper suggests that the Central Government should mandate all Prefectures to conduct Strategic Environmental Assessment (including the screening process). This includes the possibility of including this into the EIA Act. Guidelines should be set defining SEA and the basic required procedure to ensure it would be distinct from the existing EIA process which is a “programme-based” assessment of environmental impact. The plans for SEA by each Prefecture (Local Government) should then be submitted to the Central Government for approval that it corresponds to the concept of SEA.

Tanaka (2016) stated that not including the “screening process” at the initial stage of SEA does raise concerns (small scale projects not subject to SEA potentially having large impact to the environment) but raises efficiency at the same time. The implementation of SEA strategies could first be initiated without the “screening process” but with the option of submitting requests for screening if there is concern for potential environmental impact. Efficiency would be raised by setting the criteria for which projects would be subject to SEA in advance, as without it, the Local Government would have to review each case and decide on whether if it would be subject to SEA. This process itself would require some time, and at the initial stage of implementing SEA may result in a situation close to having internal

criteria. This is as there would be criticism if seemingly similar projects; of such as content, scale, and feature, would not all receive the same judgement by the Local Government.

As Tokyo Prefecture and Saitama Prefecture have demonstrated, the Prefectures could first decide on the project types and scales in which they consider SEA to be necessary for, based on their Prefecture's environmental features. Eventually the SEA procedure should be revised to not limit the boundaries of projects to be subject to SEA (including the screening process).

There may be criticism from businesses planning the project, that conducting SEA would cause inefficiency. Regarding this aspect, SEA could not only ensure stricter assessment of the environment but would positively impact business planners as well. With the current EIA system which is "programme-based EIA," businesses would conduct EIA assuming they could implement the project, and "revise" their plan based on the assessment results. However in some cases, projects may be cancelled due to opposition. According to Kayano (2024b), there had been 52 cases of reported conflicts on solar PV projects from 2013 to 2022 in Nagano Prefecture. In some cases, opposition by local communities led to the cancellation of solar PV projects. SEA considers social and economic aspects as well, and in many cases involves consultations with local stakeholders. Therefore if the implementation of projects at that site would not be agreed upon, business planners would be able to save cost by withdrawing from the project at an early stage. Potentially, businesses would be able to

start planning and conducting EIA with more confidence that the project itself would be implemented; planning revision would still be required based on assessment results.

The proposed SEA framework in this paper would include considerations toward social and economic aspects, including mandatory consultations with local stakeholders. By the point businesses would be responsible for conducting their “programme-based EIA,” SEA would have been conducted and so both the local government and local stakeholders would have agreed on conducting the project at that specific location.

Therefore, conducting SEA would ensure stricter assessment of the environment but would also be beneficial for businesses (project planners) as well, as they could save costs and raise efficiency by withdrawing from projects which consent from the local community could not be gained, and be focusing on projects with high confidence of being taken place. The quality and efficiency of “programme-based EIA” could also be improved, as businesses could then focus on evaluating the impacts which may be caused by their specific plan and technology they intend to utilise. This may also enable drafting of more detailed and precise mitigation strategies.

## **Conclusion**

This paper analysed the Environmental Impact Assessment Procedures in Japan, and formed policy recommendation for incorporating SEA, which would positively impact

consideration toward the environment and businesses (project planners) of solar PV projects.

As discussed throughout this paper, Japan has a unique EIA structure with EIA Ordinances covering considerations specific to the Prefecture in cases where the EIA Act does not cover such cases. The structure of having EIA regulations at two levels (national level and regional/local government level) would actually enable precise assessments based on the Prefectures' features. SEA would not only ensure thorough assessment of the environment but would also eventually increase efficiency of initiating new solar PV projects, as local governments would have already identified potential sites where the project could be taken place.

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