

# Island submersion by climate change: an analysis from an ecological inequalities perspective

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## **Abstract:**

The aim of this poster is to present a theoretical example of the submersion of island due to climate change and to discuss some major consequences from the perspective of ecological inequalities.

**Keywords:** Inequalities; Climate change; Island; Equity

## **1. Introduction**

The aim of this poster is to present a theoretical example of the submersion of island due to climate change and to discuss some major consequences from the perspective of ecological inequalities.

A classification of what are ecological inequalities enables us in this poster to link the elements of nature with the different conceptions of human justice, e.g. intragenerational and intergenerational ones. This is based on a framework using the different conceptions of justice in front of environment. Thus, we use intragenerational and intergenerational theories of justice to understand how to deal with ecological inequalities.

The example of island submersion is for sure a relevant case study. Indeed, the vulnerability of small islands in the tropic is an important stake like presented in an IPCC report (Mimura, 2007) and are often described as the territories the most vulnerable to climate change. The problem seems to be essential because it generates new stateless people and can lead to an

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increase of poverty in some part of the world. Here, we postulate a simplified model of a situation of a two-island world at two periods in the time. The environmental risk is the possibility of submersion of one of the two islands between the two periods. This example is particularly interesting because according to IPCC (2001) the “adaptation to sea-level rise and climate change will involve important trade-offs, which may include environmental, economic, social and cultural values”.

## **2. Theoretical foundations**

We base our analysis of ecological inequalities in the case of island submersion on two different kinds of literature. First of all, we work on an historical perspective of the consideration of the distribution of environmental goods in the literature. We finally use four different literatures: environmental justice in America and Europe (Pearce, 2006), ecological debt (Martinez-Alier, 2002) and environmental sustainability (Brundtland, 1987). The poster presents some conclusions of those theories to establish ecological inequalities in the case of an island submersion. Secondly, we made a reference to different intra- and inter-generational theories of justice to find some normative arguments in the establishment of objectives of ecological justice. We especially use Rawls (2009) theory of justice in an intra- and intergenerational perspective and try to put in practice capabilities approach of Sen (2000) and the principle of responsibility of Jonas (1990).

## **3. Example presentation**

Here, we want to illustrate the theoretical foundations by an example. That example is based on the situation of islands when risks of submersion are possible due to climate change. This problem is very important for jurists (Cournil *et al.*, 2010). Indeed, these submersions could create some new stateless people and could lead to high costs of migration to consider and share.

Suppose a two islands world  $I_1$  and  $I_2$ . We consider the two islands for the persons they represent and do not focus on the problems of nationality, states (to simplify, we keep one island equal one representative individual)... The focus on international justice is not the one we want to illustrate here. In fact, we try to see how the different principles of justice, presented in our paper, enlighten on the political decisions when submersion of one of the island happens. We focus on a two time case  $t_1$  and  $t_2$ . Between these two times, we suppose an anthropogenic climate change with an increase of sea level with a change of generation.

In this example, we use the different principles of justice and try to analyse which conditions are important in order to have an ecological inequality or a distributive injustice. For example, we can consider that individual of  $I_1$  is richer than individual of  $I_2$  or that there are differentiated responsibilities about the  $CO_2$  pollution.

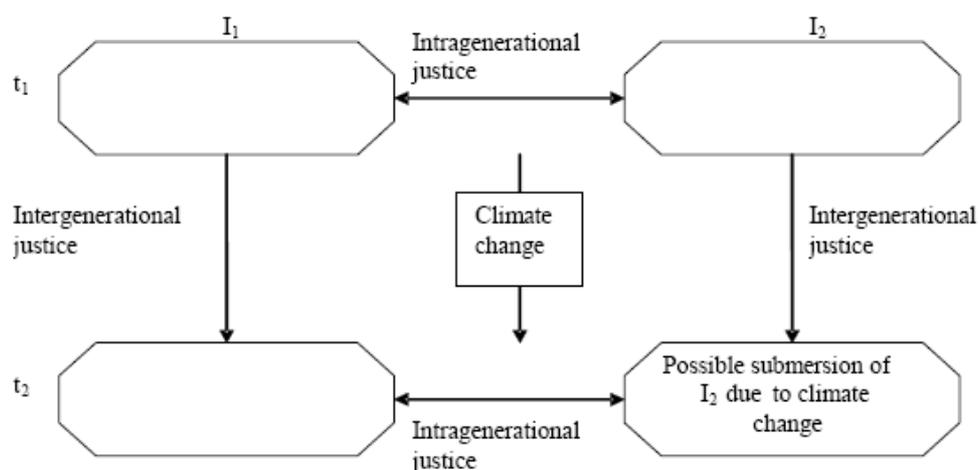


Figure 1 Island submersion and climate change

From that example and the different theories presented in Section 2, we present conclusion about justice. Some of those conclusions are presented in the table below:

Theories of justice	Conditions to have injustice/inequality
Rawlsian theory of justice	<ul style="list-style-type: none"> <li>- Intra: Injustice if <math>I_1</math> richer than <math>I_2</math>, obligation to equalize opportunities and respect the principle of difference for the social primary goods.</li> <li>- Inter: Injustice if anthropogenic destruction</li> </ul>
Sen capabilities	<ul style="list-style-type: none"> <li>- Intra: Ecological inequality if differences in terms of capability between <math>I_1</math> and <math>I_2</math> due to the climate change</li> <li>- Inter: No element</li> </ul>
Jonas' Responsibility principle	<ul style="list-style-type: none"> <li>- Intra: ecological inequality for favoured individual at <math>t_1</math></li> <li>- Inter: irreversible disappearance of <math>I_2</math></li> </ul>
Environmental justice	<ul style="list-style-type: none"> <li>- Intra: Environmental injustice at time 2 if <math>I_1</math> is richer than <math>I_2</math></li> <li>- Inter: No element</li> </ul>
Brundtland report	<ul style="list-style-type: none"> <li>- Intra: Ecological inequality if the needs of <math>I_1</math> and <math>I_2</math> at time <math>t_1</math> are sacrificed to enable the inhabitants of the islands to meet their needs at time <math>t_2</math>. At time <math>t_2</math>, injustice if no transfer from <math>I_1</math> to <math>I_2</math></li> <li>- Inter: Injustice if the needs of <math>I_2</math> are compromised at <math>t_2</math></li> </ul>
Ecological debt	<ul style="list-style-type: none"> <li>- Ecological inequality if <math>I_1</math> is responsible of the submersion and if they do not compensate (in the case of weak sustainability)</li> <li>- Inter: No element</li> </ul>

Table 2 Summary table

#### 4. Conclusion

The interest of this model is based on two special features. First, theories of justice are used for analysing the inequalities associated with environmental goods, which is not generally the case. Second, such a background enables us to analyse more deeply the problem of distribution of nature between individuals belonging to the same generation and between two different generations in the same framework. Thus, this poster emphasises the fact that intergenerational and intragenerational ethical questions cannot be solved one without the other when environmental goods are at stake and, doing so, put forward transgenerational stakes.

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