



**From Citizen Access to Information  
to the Dilution of Responsibility in the Environmental Field**

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Résumé : La prise de décision concernant l'Environnement a changé durant ces cinquante dernières années. Le consensus ; portant sur la manière d'approcher les interrelations Humains-Nature ; est institutionnalisé par la *Conférence de Stockholm* de 1972, qui a porté les enjeux environnementaux sur la Scène Internationale. Autour de cette période les Etats établissent leurs Institutions nationales, dénommées principalement un Ministère de l'Environnement.

Nous postulons que la Gouvernance ne peut être considérée sans la Transparence ; et donc la reconnaissance de devoir informer tous sur les questions d'Environnement. L'analyse d'une Convention, pilier pour l'Europe à ce sujet, et plusieurs lois clé pour la France, fournissent les bases pour nos conclusions. Par ailleurs nous présentons plusieurs accidents majeurs qui ont fragilisé la puissance étatique, et miné son monopole de contrôle sur la prise de décision en France (point 1).

Les Humains prenant compte des limites de la Terre, et de l'Incertitude qui entoure plusieurs enjeux environnementaux ; la Gouvernance accompagnée de Transparence devient la règle d'action sur tout ce qui concerne l'Environnement. La divulgation de l'information par les Pouvoirs Publics (directement ou via les Organisations Internationales) et les Médias, est d'importance primordiale pour aboutir à la Transparence nécessaire pour la représentation



individuelle des enjeux. Nous discutons dans notre article le cas de la montée des eaux et des problèmes d'érosion côtière qui lui sont associés en centrant sur les Îles. Nous présentons le cas insulaire qui semble traduire les premières migrations insulaires, fait bien antérieur aux cas récents présentés par les Médias des Kiribati, Tuvalu ou Vanuatu (point 2). Notre conclusion propose un cadre d'interprétation de la Gouvernance et la Transparence d'une part ; avant de présenter notre interprétation de l'évolution des représentations vis-à-vis de la Nature, d'autre part. Nous questionnons alors la place des Médias dans la dynamique d'Information des Sociétés.

**Mots-clés** : Gouvernance, Transparence, Médias, accès à l'Information, Convention d'Aarhus, Îles, AOSIS, Migrations insulaires, Montée des eaux, Environnement.

Abstract: Decision making in relation to the Environment has changed in the past fifty years. The consensus on how to approach interrelations of Humans within Nature appears to have been institutionalized by the *Stockholm Conference* of 1972, which brought environmental issues to the International Level. Around that period, States established their national Institutions, mainly called a Ministry of the Environment.

We argue that Governance is harnessed to Transparency, and to recognizing the importance that people be informed regarding environmental issues. An analysis of a Convention pillar in Europe, and some key laws for France, provides the basis of our conclusions. Additionally, we consider some important accidents that made the State less powerful, and undermined its monopolistic control over environmental decision making (point 1).



As Humans come to know Earth's limits and Uncertainty, Governance with Transparency is becoming the main rule for action on environmental matters. Mass media and Governmental (directly or via International Organizations) disclosure of Information is of paramount importance to achieve the Transparency needed in the individual representation of environmental issues. In this article, we discuss Sea-level rise and the resulting coastal erosion problem for Islands as an example. We present the islands that seem to illustrate the first insular migration due to Sea-level rise and constitute an anterior situation to mediatized cases as Kiribati, Tuvalu or Vanuatu (point 2). Finally, our conclusion provides a framework about Governance and Transparency in one side, and our proposal regarding the evolution of representations *vis-à-vis* Nature in the other side. We then question Medias' place in the dynamic of Information of Societies.

**Keywords:** Governance, Transparency, Media, access to Information, Aarhus Convention, Islands, AOSIS, insular migrations, Sea-level rise, Environment.

Resumen: La toma de decisiones en el campo ambiental ha cambiado durante los últimos cincuenta años. El consenso con respecto a las interrelaciones Humanos-Naturaleza puede ser considerado como institucionalizado por la *Conferencia de Estocolmo* de 1972, la cual eleva los asuntos ambientales a la Escena Internacional. Los Estados establecen su Institución nacional particular, cerca de este periodo, la cual toma principalmente el nombre de Ministerio del Ambiente.



Consideramos que la Gobernanza está atada a la Transparencia, según lo presentamos en este artículo.

Primero proveemos elementos sobre el reconocimiento de la importancia de informar a la gente sobre los asuntos ambientales. La evaluación de una Convención pilar para Europa, tal como leyes en Francia proveen la base de nuestras conclusiones. Además, damos elementos sobre accidentes mayores los cuales han fragilizado el poder estatal, y asimismo disminuido la toma de decisiones monopolizadas (Punto 1).

Los Humanos se han dado cuenta de los límites del Planeta Tierra y de la Incertidumbre que acompaña ciertos asuntos globales, de tal manera que la Gobernanza con Transparencia viene a ser la regla de acción en el campo ambiental. La divulgación de la Información por los Medios de comunicación tal como por los Gobiernos (directamente o *via* las Organizaciones Internacionales) es de importancia primordial para tener la Transparencia necesaria en la representación individual de los desafíos. Discutimos con este artículo el aumento del nivel del mar y los problemas de erosión costera asociados, tomando como ejemplo el caso de las Islas. Asimismo, presentamos el caso que luce ser de los primeros migrantes insulares, anterior a los casos provistos por los Medios tal como Kiribati, Tuvalu o Vanuatu (Punto 2).

Para concluir, proveemos un marco sobre Gobernanza y Transparencia, por un lado, y nuestra propuesta sobre la evolución de las representaciones sobre la Naturaleza por otro lado. También discutimos el rol de los Medios en la dinámica de Información de las Sociedades.

**Palabras claves:** Gobernanza, Transparencia, Medios, acceso a la Información, Convención de Aarhus, Islas, AOSIS, Migraciones insulares, aumento en el nivel del mar, Ambiente.



## Introduction

The definition of Governance that we have adopted for this article is that presented by Jean-Jacques Roche (1999, p.40, our translation):

*“Governance is the new manner to conceive public action to provide adequate answers to some issues that go over the framework of States (population, environment.[...])*

*[...]Governance becomes the new approach of international relations that is genuine to provide instruments able to catch humanity as a whole.*

Furthermore, he said that even if the concept of *Global Governance* is weak, it explained the creation in 1989 of an independent Commission that published in 1995 a Report entitled “*Our Global neighboring*”. The Report gives a general definition of **Governance** perceived as “*the sum of the different manners by which individuals and institutions, public and private, manage their common business. It includes official institutions and regimes doted of executory powers, as the informal arrangements on which people and institutions came to an agreement or that are perceived of their interest*” (idem, p. 241).

To analyze the practical consequences of the above concept of Governance, we first present the recognition of the need to provide access to Information about environmental issues to people; and conclude with wonderings about what we call the ***Dilution of Responsibility***. Our analysis also considers the *Aarhus Convention* and its transposition at regional and national levels, on one hand; and, the proposal of Grigorescu A. in 2003 about disclosure of Information



(two levels of Transparency) on the other. Then, we illustrate some elements about Governance regarding Climate Change and Sea-level rise focusing on the case of islanders. We highlight how access to Information can slow down individual representation of an issue, and how some local contexts can provide bias over reality. Finally, we discuss the shift that is in process regarding Nature.

## **1. On the Recognition of the importance to involve people in environmental issues**

### *1-1 Assumptions for the General Context<sup>1</sup>*

For the last 50 years, decision making in the environmental field has evolved at the International Level, and has since been transposed to the Regional, National or even Local levels. To protect the Environment, it is necessary to provide Access to Information, Education on the Environment, and facilitate Participation and Governance. “**Principles 19 and 20** of the Final Declaration of the *United Nations Conference on the Human Environment* held in Stockholm (June 5-16, 1972) recognize the importance to inform. Sensitizing people to environmental issues through wide Mass Media dissemination, would contribute to protect and improve the Environment. **Recommendation 97** of the *Action Plan for the Human Environment* included an information Programme designed “to create the awareness which individuals should have on environmental issues” and invite States to “associate the public with environmental management and control”.

The *World Charter for Nature* adopted by the General Assembly on 28<sup>th</sup> October 1982, indicates regarding implementation (**point 16**), that “all elements [for planning] shall be



*disclosed to the public by appropriate means in time to permit effective consultation and participation*". In 1992 (3-4 June), in the *Rio Declaration on Environment and Development*, **principle 10** enounces that "*Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided*" (after Narbey P. and Raunet M., 2008, our translation; United Nations, 1972, *Report of the United Nations Conference on the Human Environment*; United Nations, 1992, *The Rio Declaration*). Point elements about one convention that materialized the transposition of those targets enounced in international texts are presented.

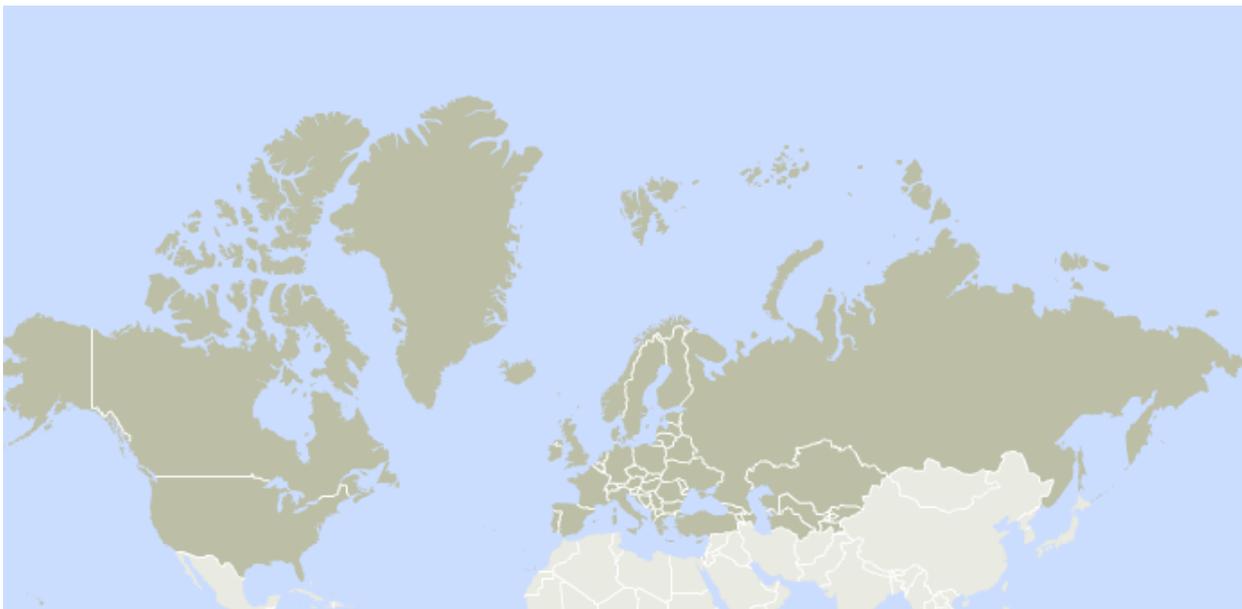
### ***1-2 Materialization of Governance and Transparency for Europe and France: the Aarhus Convention***

Worldwide, few perceive that, for the people to take care of Earth resources at the International Level we must think globally and thus need local action in such manner as to reach the global targets enounced. Europe<sup>ii</sup> is one of those 'compartments' for action (Priam, 2004) where stakeholders have to define tools and ways to reach the desirable targets.



The *Economic Commission for Europe* (ECE)<sup>iii</sup> includes 56 Member States as presented on Map 1 (<http://www.unece.org/mission.html>). It is home to 20% of the world population and covers more than 47 million square kilometers ([www.unece.org](http://www.unece.org)). During the *Fourth Ministerial Conference, the United Nations Economic Commission for Europe (UNECE)* adopted the *Convention on access to information, public participation in decision-making and access to justice in environmental matters* in Aarhus, Denmark on 25 June 1998.

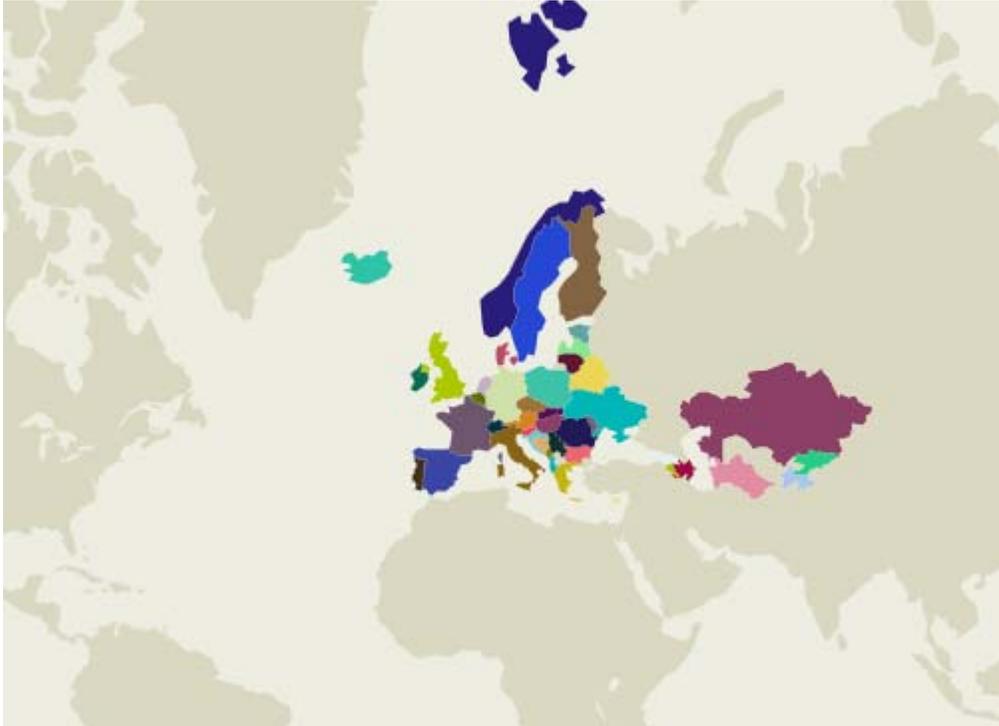
This Convention organizes and imposes: a *Right to know*, a *Right to participate*, and a *Right to oppose*; via *access to Justice*. *Article 5* dealing with “*Collection and dissemination of environmental information*” states the systematic obligation to inform by Public Authorities. The Convention provides for “Access to environmental Information” (*article 4*), “Public Participation” (*articles 6, 7 and 8*) and “Access to Justice” (*article 9*).



Map 1: Member States –in grey– of the *United Nations Economic Commission for Europe (UNECE)* are home to 20% of the World population and represent more than 47 million square kilometers (From <[www.unece.org](http://www.unece.org)>).



Among those Member States, Aarhus Convention has 47 parties, out of which 46 countries (shown on Map 2) and the European Union that ratified on the 17<sup>th</sup> February 2005.



Map 2: The 46 Parties to the Aarhus Convention (From <[www.unece.org](http://www.unece.org)>).

The purpose of the Convention is the following (<http://ec.europa.eu/environment/aarhus/>):

*The Aarhus Convention establishes a number of rights of the public (individuals and their associations) with regard to the environment. The Parties to the Convention are required to make the necessary provisions so that public authorities (at national, regional or local level) will contribute to these rights to become effective. The Convention provides for:*

- *the right of everyone to receive environmental information that is held by public authorities ("**access to environmental information**"). This can include information on the*



*state of the environment, but also on policies or measures taken, or on the state of human health and safety where this can be affected by the state of the environment. Applicants are entitled to obtain this information within one month of the request and without having to say why they require it. In addition, public authorities are obliged, under the Convention, to actively disseminate environmental information in their possession;*

- *the right to participate in environmental decision-making. Arrangements are to be made by public authorities to enable the public affected and environmental non-governmental organisations to comment on, for example, proposals for projects affecting the environment, or plans and programmes relating to the environment, these comments to be taken into due account in decision-making, and information to be provided on the final decisions and the reasons for it ("**public participation in environmental decision-making**");*
- *the right to review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general ("**access to justice**").*

Related to vertical Governance, the Convention content must be transposed. For the European Union, its transposition is done in different texts that we present as follows:

- A) *"In 2003 two Directives concerning the **first and second "pillars"** of the Aarhus Convention were adopted; they were to be implemented in the national law of the EU Member States by 14 February and 25 June, 2005 respectively:*



- *Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public **access to environmental information** and repealing Council Directive 90/313/EEC [...]*
- *Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public **participation** in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC*

*Provisions for public **participation** in environmental decision-making are furthermore found in a number of other environmental directives, such as **Directive 2001/42/EC** of 27 June 2001 on the assessment of certain plans and programmes on the environment [...] and **Directive 2000/60/EC** of 23 October 2000 establishing a framework for Community action in the field of water policy [...]*

*Both **Directives 2003/4** and **2003/35** contain provisions on **access to justice**.*

*Furthermore, on 24 October 2003 the Commission presented a Proposal for a Directive of the European Parliament and of the Council on **access to justice** in environmental matters [**COM(2003) 624**]. This proposal was part of the "Aarhus package", also consisting of the Proposal for a decision to ratify the Convention, [**COM(2003) 625**] [...], and a Proposal for a **Regulation** to apply the provisions of the Convention to Community institutions and bodies [**COM(2003) 622**]*



B) The latter was adopted on 6 September 2006: **Regulation (EC) N° 1367/2006** of the European Parliament and of the Council on the **application of the provisions of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to Community institutions and bodies** (OJ L 264, 25.9.2006, p.13), entered into force on 28 September 2006 and became of application on 17 July 2007.

The "**Aarhus Regulation**" covers not only the institutions, but also bodies, offices or agencies established by, or on the basis of the EC Treaty. They now need to adapt their internal procedures and practice to the provisions of the Regulation. The **Aarhus Regulation** addresses the "three pillars" of the Aarhus Convention - **access to information, public participation** and **access to justice** in environmental matters - where those are of relevance to Community institutions and bodies and lays down related requirements. Regarding access to environmental information, the **Aarhus Regulation** extends **Regulation (EC) No 1049/2001** of the European Parliament and of the Council of 30 May 2001 about public access to European Parliament, Council and Commission documents to all Community institutions and bodies. The Aarhus Regulation furthermore requires those institutions and bodies to provide for public participation in the preparation, modification or review of "plans and programmes relating to the environment". It also enables environmental NGOs meeting certain criteria to request an internal review under environmental law of actions, or omissions, by said Community institutions and bodies.



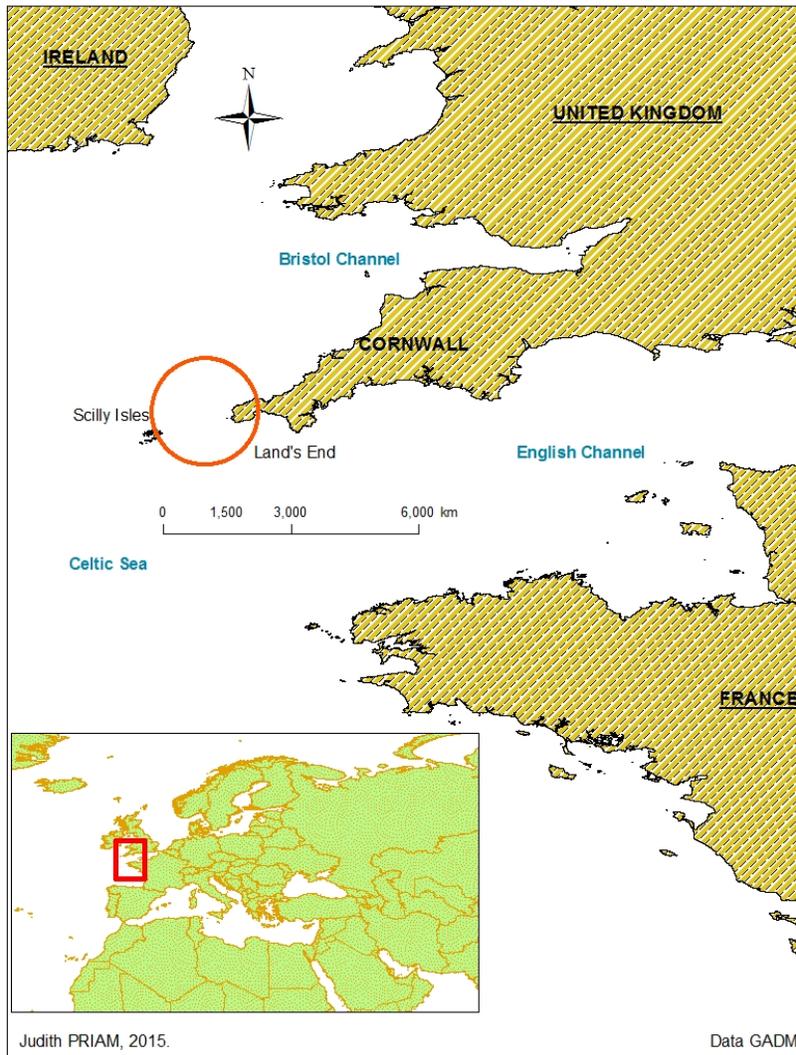
*The Decision on conclusion of the Aarhus Convention by the EC was adopted on 17 February 2005 [Decision 2005/370/EC]. The EC is a Party to the Convention since May 2005” (acceded online, <<http://ec.europa.eu/environment/aarhus/legislation.htm>>).*

Punctual accidents have had wide impacts; and, to provide public information about their effects on the Environment appeared to become obligatory. This is the case of some of the first outstanding oil spills in the European coasts as when the “*Torrey Canyon ran aground on Pollard Rock on the Seven Stones Reef, near Lands’ End, Cornwall on 18<sup>th</sup> March 1967. Thousands of tons of oil were soon spilling from the stricken vessel’s ruptured tanks and during the next 12 days the entire cargo of approximately 119,000 tons of Kuwait crude oil was lost. We learnt that* (see Map 3):

*There are reefs all round Land’s End and around the Scilly Isles (look at all the lighthouses). Two particularly dangerous ones are ‘Wolf Rock’, and ‘Seven Stones’. ‘Wolf Rock’ has a lighthouse; ‘Seven Stones’ has a lightship.*

*The Captain planned to sail between the Scilly Isles and the ‘Seven Stones’. This channel is 7 miles wide.*

*(<<http://www.splashmaritime.com.au/Marops/data/less/Poll/torreycan.htm>>).*

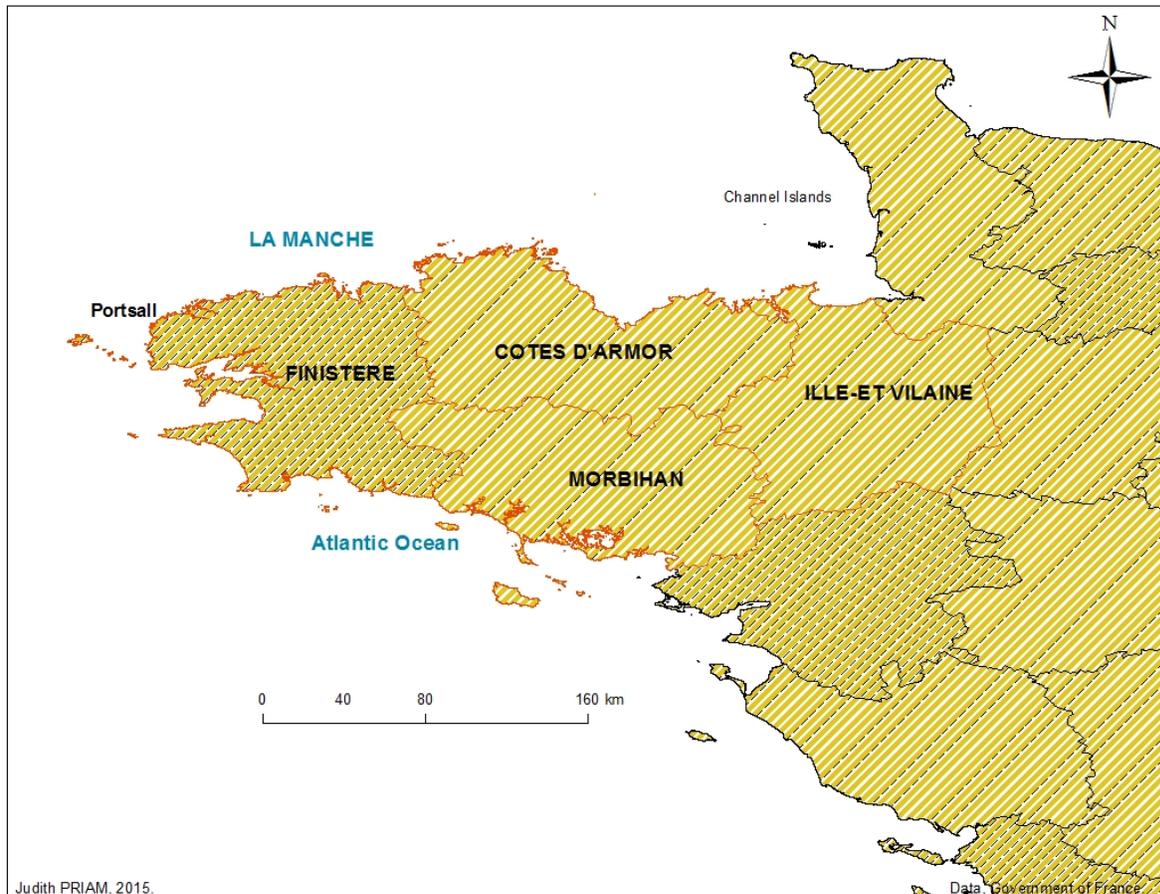


Map 3: The Torrey Canyon oil spill occurred in 1967, when the captain decided to sail between the Scilly isles and Land's End and ran aground on the Seven Stones.

[Another Oil Spill occurred when] *“the tanker Amoco Cadiz ran aground off the coast of Brittany on 16<sup>th</sup> March 1978 following a steering gear failure. Over a period of two weeks the entire cargo of 223,000 tons of light Iranian and Arabian crude oil and 4,000 tons of bunker fuel was released into the seas. Much of the oil quickly formed a viscous water-in-oil emulsion, increasing the volume of pollutant by up to five times. By the end of April, oil and emulsion had*



contaminated 320km of the Brittany coastline, and had extended as far east as the Channel Islands” –See Map 4 - (<http://www.itopf.com/in-action/case-studies/case-study/amoco-cadiz-france-1978/>).



Map 4: The Amoco Cadiz Oil Spill occurred on the Portsall Rocks, in March 1978, in the Region of Brittany (including then four departments delimited by the red line) and reached the Channel Islands.

Another key accident that concerned Europe was Tchernobyl, an incident in 1986 that began on the night of 25<sup>th</sup> April. “ *The Tchernobyl Power Complex, lying about 130 km north of Kiev, Ukraine, and about 20 km south of the border with Belarus, consisted of four nuclear reactors of the RBMK-1000 design.[...] Within a 30 km radius of the power plant, the total*



*population was between 115,000 and 135,000.[...] The accident caused the largest uncontrolled radioactive release into the environment ever recorded for any civilian operation, and large quantities of radioactive substances were released into the air for about 10 days.[...] (acceded online <<http://www.world-nuclear.org/info/safety-and-security/safety-of-plants/chernobyl-accident/>>).*

Information provided by States at that moment has been widely questioned later as inadequate. For example, it had been said in France that the cloud of radioactive pollutants had stopped at the frontier. *The Central Service for Protection Against Ionizing Rays* (in French, the *Service central de protection contre les rayons ionisants (SCPRI)*) indicated a low radioactivity that needed no sanitary action. On May 10th, it was announced to the population that the radioactivity was 400 higher than the norm. [...]. On the 12th of May, the french Journal Liberation called the event information, the « *radioactive lie* » (our translation for, <[http://www.lepoint.fr/chroniqueurs-du-point/laurence-neuer/tchernobyl-le-mensonge-d-etat-s-est-il-arrete-a-la-frontiere-de-la-verite-07-09-2011-1370720\\_56.php](http://www.lepoint.fr/chroniqueurs-du-point/laurence-neuer/tchernobyl-le-mensonge-d-etat-s-est-il-arrete-a-la-frontiere-de-la-verite-07-09-2011-1370720_56.php)>).

These events are among those that helped citizens realize the existence of a weaker State than that they originally knew of; and motivated the public to open up to a wider decision making approach with multi-stakeholders processes, and access to information. According to Kierkegaard (2009, p. 6) “*The right to access to official documents was first developed in Sweden in 1766 and spread to many other countries*”. The Swedish Government states: “*Sweden is a free and open society. Its people have the right to take part in demonstrations, freedom of speech, a free press, the opportunity to move freely in nature and the right to scrutinise those in*



*power. Openness is also about creating an equal society* (acceded online, <<https://sweden.se/society/openness-shapes-swedish-society/>>).

*“Sweden’s Freedom of the Press Act 1766 (Act) is widely considered the oldest piece of freedom of information legislation in the world [...]. Since 1766 the Act has been thoroughly renewed, with latest additions that came into effect in 2003. The initial purpose of the Act was to abolish the political censorship of public documents and to ensure the right for everyone to publish written documents. Right of access to public documents was also listed in the first versions of the Act. [...] The Publicity and Secrecy Act of 2009, details what government agencies can keep secret, what type of document, under what circumstances, and towards whom* (acceded online <<https://www.ucl.ac.uk/constitution-unit/research/foi/countries/sweden>>).

Regarding ecological concerns, loss of the dynamic Earth equilibrium has been more and more highlighted by different actors: States and their bureaucracy dedicated to the Environment, NGOs, sentinels, scientists, citizens, journalists.... Transparency is considered an obligatory step to reach a better environmental status.

In France, the implementation of the *Aarhus Convention* in the national laws includes the three pillars, or principles (our translation as acceded online from <http://www.irsn.fr>). The first is the ***Principle of Information*** through the adoption of the *Charter of the Environment (article 7)* on 28 February 2005 and then through ***article L.110-1-4*** of the *Code of the Environment*. However, *Access to information* was enacted in France prior to said transposition (even if some



information was considered confidential) by *Law n°78-753* of 17 July 1978; as modified by *Law n°2000-321* of 12 April 2000 and *Ordonnance n°2005-650* of 6 June 2005. Finally, under *Article L.124-7* (Code of the Environment), the State must gather and disseminate information about the state of the Environment.

Regarding the *Principle of Participation*, transposition occurred through *Article 7* of the *Charter of the Environment* and *Article L.110-1-4* of the *Code of the Environment*. Another relevant legislation is ordinance n°2004-489 of 3 June 2004 (Transposition of 2001/42/CE), which is related to incidents and impacts of plans, in addition to programmes on the Environment. The *Principle of Access to Justice* is included in *Law 78-753* of 17 July 1978 that established the *Commission for Access to Administrative Documents* (CADA).

In 2009, the *Loi-cadre* called *Grenelle I* (after Paul G., 2011, p. 43, our translation) adopted on the 3<sup>rd</sup> of August 2009, was a turning point. It integrated longstanding developments about Governance and Information. Five categories of stakeholders are involved in the Governance process: 1) State, 2) Local Collectivities and their grouping, 3) Enterprises, 4) Associations and Foundations dealing with environmental issues, and 5) Consumers.

*Grenelle II*, includes some arrangements (after Paul G., 2011, pp. 43-48, our translation) as follows:

*1) Arrangements related to Enterprises that have environmental obligations,*



2) *Arrangements related to Consumption:*

- *Information of the consumers regarding impacts of the products on the environment*
- *Publicity of energy consumption for the generation of concerned products*
- *Providers of transportation (people, merchandises or move) must indicate CO<sub>2</sub> emissions*
- *Associations can initiate judicial actions*

3) *Reform regarding Impact Studies.*

4) *Reform regarding Public Hearings.*

5) *Arrangements regarding information and concertation.*

6) *Territorial Projects of Sustainable Development, related to Chapter 28 of the Rio Declaration and Engagements of the Declaration of the Territorial Collectivities to the Johannesburg Summit in 2002 (art. 252).*

7) *Debate in the field of Sustainable Development.*

The law in France, provides for participation through different means: 1) Public hearings, 2) Concertation, 3) Public debate (cf. our next point about the *National Commission for Public Debate*), 4) Some new procedures for some fields as water, and 5) Some Tools not restricted to the environment as Local consultations, Local Referendum (see our conclusion), Right of Petition, Committees of District, Conference of Citizens<sup>iv</sup> (after Narbey and Raunet, 2008, pp. 822-858).



A *National Commission for Public Debate* (in French, *Commission Nationale du Débat Public*, CNDP) has been established in France for certain projects. This is an *Independent Administrative Authority* (IAA) whose mission is to inform and include citizens in the decision process (<<https://www.debatpublic.fr/son-role>>). One of the pillars of that Commission is Transparency.

### ***1-3 On Transparency***

Under Transparency, the French *National Commission for Public Debate* states:

*All the information and the studies done regarding a project must be available to the public. No question can be prohibited or censured during the Debate nor can any opinion be censured in the final evaluation of the Project. Transparency is essential for democracy. It must include answers to citizens' questions. The Commission must pay attention to complete and satisfying answers (our translation, <<https://www.debatpublic.fr/son-role>>).*

That Independent Administrative Authority (IAA) is a “*State Institution, in charge on the name of the State, to insure the regulation of sectors considered as essential, as the State avoids to take part directly*”. The CNDP was created in 1995 and is an IAA under the law related to the “*democracy of proximity*”, of 27th February, 2002. The CNDP is composed of 25 members appointed for 5 years including one president and two vice-presidents. Its mandate is to look after the respect of public participation in the process for project elaboration of territorial development and national facilities –public and private- as highways, railways, power lines...



*because they include profound socio-economic issues or may have significant impacts on the environment. [...] The CNDP may decide to organize the public debate or to appoint a Particular Commission for that purpose –Commission Particulière du Débat Public- or even the Project Manager (our translation, < <http://www.vie-publique.fr/forums/rub1308/cndp-debat-public.html>>).*

For Europe, a synthesis elaborated by the European Council entitled “**Transparency, Historical overview 1992-2007**” gives elements about a) Key events, b) Legal Instruments of the Community institutions and bodies and c) Judgments of the Court of Justice and of the Court of First Instance (acceded online, [www.consilium.europa.eu/uedocs/cmucUpload/sn02524.en07.pdf](http://www.consilium.europa.eu/uedocs/cmucUpload/sn02524.en07.pdf)). After Grigorescu A. (2003), the “*Discussions of transparency can be found in studies of international conflict, international organization, environmental politics, monetary policy, trade, corruption, and democratic theory*”. Transparency as it appears more and more evident, would contribute to solve problems through collective action:

*In most studies at the international level, government transparency is seen as a factor that enhances cooperation among states and allows for solutions to collective action problems (e.g., Florini, 1997; Stein, 1999; Finel and Lord, 2000:341)*

As stated by Grigorescu, little research has been done about the causes of Transparency (2003, p. 645) and so he focused on a factor affecting Government Transparency: *interaction with International Organizations (IOs)*. He said:



*“I argue that one of the principal causes of change in domestic transparency (although not the only one) is currently related to the role of international organizations as alternative sources of information. This role has become increasingly relevant as states have become more “transparent externally” (i.e. they have been offering greater amounts of information to international organizations) and as IOs have themselves become more transparent, offering more information directly to the public. Sometimes, the information made public by IOs differs from that released by governments to their own societies. In order to maintain public support, governments adopt institutions of domestic transparency (such as laws on access to information) as signals intended to boost the credibility of the information they offer to their own public”.*

He distinguished the “**external government transparency** – referring to information released by a Government to International Organizations- and **domestic government transparency** – referring to information released by a Government to its Society-” that he represented by Figure 1.

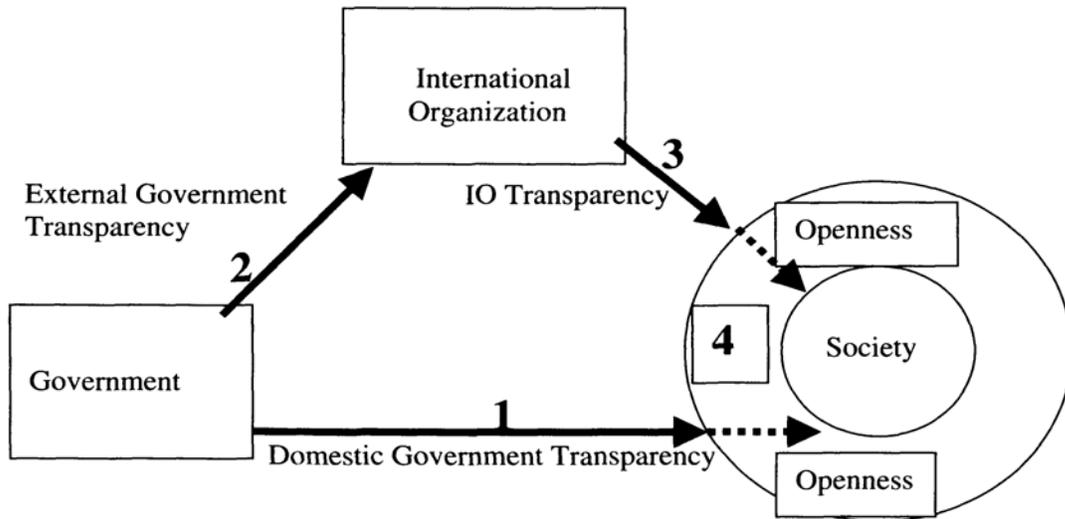


FIG. 1. “Transparency” and “Openness” of Political Systems

Even though Grigorescu (2003) doesn't focus on environmental Transparency in his analysis, his hypothesis regarding interaction with IOs is interesting and is totally validated in the environmental field. Nowadays some environmental NGOs and IOs are of paramount importance to understand global scale phenomena and environmental disruptions in the dynamic Earth equilibrium. People and Governments can better understand local events by acceding to global scale events information.

Environmental events such as floods, droughts, water rationing and so on, can't be hidden anymore, as they are perceived through the Media and Internet, if not in person. This is the case for Climate Change, Sea level rise and coastal erosion in Islands.



Gas emission information transparency provided by each State is the way to gather data for modelling and understanding ongoing and future global and local changes. The NAZCA Platform that is fully available to citizens can be seen as a tool for Transparency and synergies on *commitments to climate action by companies, cities, subnational regions and investors to address climate change*. (<http://climateaction.unfccc.int/>)

## ***2. On climate change recognition, Sea-Level rise and the First Insular Climate Migrations***

Recognition of the interconnections between Climate Change and CO<sub>2</sub> effects resulting from burning fossil fuels has been a slow process at the worldwide governance level. The process is traceable to the 1896 *initial considerations* by Svante Arrhenius, Chemistry Nobel Prize, on future climate impact of increased fossil-fuel combustion (Uppenbrink J., 1996).

Arrhenius' work was based on an earlier model by Joseph Fourier. Fourier proposed an equation to calculate the average temperature of the Earth's surface in 1827 but *he was 30°C too low* [because] *he did not know how much of the radiated heat was absorbed by the atmosphere*. *He used a value for this coefficient which gave him the right number of approximately 15°C*. Then John Tyndall experimented in a cylinder with a purified atmosphere and found *that there was no energy absorbed by the major gases in it*. *He obtained a value for Fourier's coefficient that was very close to zero*. *He concluded that minor gases were absorbing the infrared*



*radiation, a fairly good understanding of the greenhouse effect by 1860 (after D. A. King, 2007, pp. 883-884).*

An important step that followed was the work of Arrhenius in 1896, when he “*pointed out that by burning fossil fuels we are increasing the level of one of those greenhouse gases quite substantially, namely carbon dioxide. He put up the suggestion, which was fantastic at the time, that we might even double the amount of carbon dioxide in the atmosphere, saying “and I can use Fourier’s equations and Tyndall’s coefficient now to calculate what would happen to the earth surface temperature...” and he found a temperature rise of approximately 5° C.*” (King, 2007, p. 884).

Scientific accuracy and detail improved continuously since 1896. *As we know, diatomic molecules such as nitrogen and oxygen (which make up around 99 % of the atmosphere) do not absorb infrared radiation (King, pp. 884-885). Many details have been worked out on the effects of clouds, aerosols, changes in land use, urbanization, volcanic eruptions, solar activity and so on.*

A similar analysis of the developments on Governance for Climate Change, shows that Institutions have been established at a much slower pace.

The first International Conference on Climate organized by the **World Meteorological Organization (WMO)** took place in 1979, to launch the first international collaborative research called the **World Climate Research Programme –WCRP-** in 1980 (Priam, 2001, p. 8). The year



1992 was of paramount importance with the *Rio Conference*, and three Framework Conventions: on Climate Change, on Biological Diversity, and on Desertification. The first Accord to reduce Climate Change was the Kyoto Protocol of 1997 that entered into force in February 2005 with the ratification by Russia in 2004. During the Conference, one Plan of Action called *Agenda 21* was also established, that listed 115 actions to take. In Section II of Agenda 21 entitled “*Conservation and management of Resources for Development*”, chapter 9 is dedicated to the “Protection of the Atmosphere” (Priam J., 2001, pp.7-8).

In that context, greenhouse gases constitute a real threat for the Earth that becomes a risk. We can consider *risks to attend not only under consequences and damages that occurred yet. [They] express a future component that lays partially on an extension into the future of damages predictable in the present. Another element would be on the generalized loss of confidence, or even on a presumed ‘potentialisateur’ risk. [...] Risk can correspond to a future we don’t want to become reality* (after U. Beck, 2008, p. 60). The Media (& Internet) can play then a role about the disclosure of ongoing and future events. For example, in France, Media have made accessible the climate-related risks and extreme events in January 2016 as presented in Figure 2. Insurance companies have played an important role in this approach.

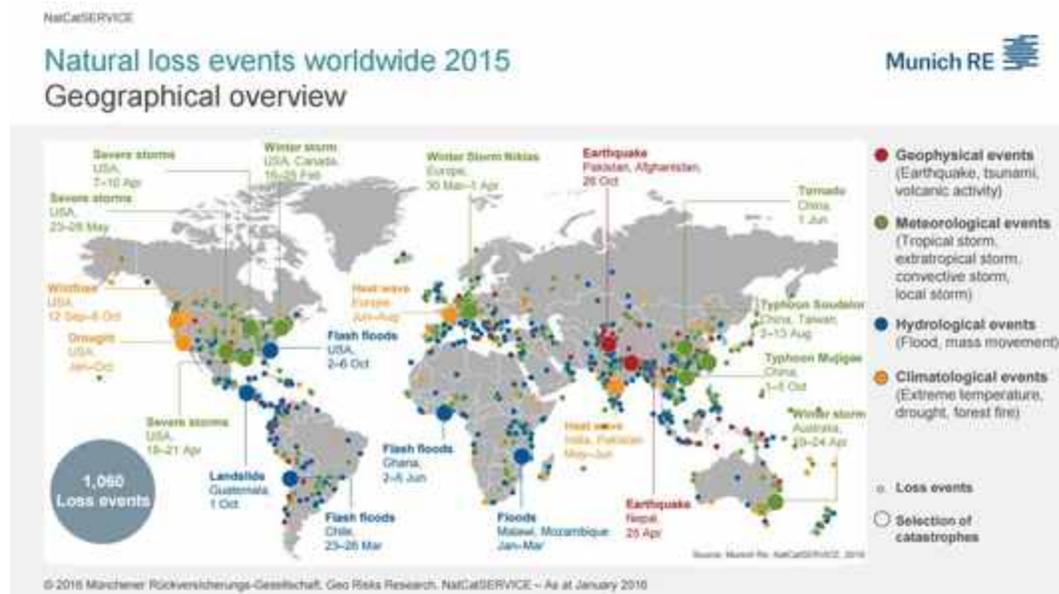


Figure 2: The mediatization of the Natural Loss events worldwide 2015 have been done for example in Le Monde, January 2016 (after Munich RE, acceded online [http://www.lemonde.fr/planete/article/2016/01/04/le-cout-des-catastrophes-naturelles-evalue-a-90-milliards-de-dollars-en-2015\\_4841338\\_3244.html](http://www.lemonde.fr/planete/article/2016/01/04/le-cout-des-catastrophes-naturelles-evalue-a-90-milliards-de-dollars-en-2015_4841338_3244.html)).

Let's consider some elements about the Climate Change Governance and Sea-level rise for Islands. First, the *Intergovernmental Panel on Climate Change* (IPCC, or *Groupe International pour l'Etude du Changement Climatique* in French –*GIEC*–) was created by the *WMO* and the *United Nations Environmental Programme* –*UNEP*– on November 1988, and the first Report was published in 1990. Some Reports of the IPCC have been focusing on Small Islands (see Nurse et al.). Particular concerns of islanders regarding Climate Change and Sea-level rise materialized through the creation of the *Alliance of Small Island States (AOSIS)* in 1990, during the *Second World Climate Conference* in Geneva. A Conference dedicated to insular experiences regarding climate change took place in Barbados in 1994 in the *Global Conference on the Sustainable Development of Small Island Developing States*. An Action



*Plan, the Barbados Programme of Action –BPoA was developed (Priam, 2001, pp. 22-23), that was reviewed in Mauritius in 2005 (Priam, 2004, p.58) and Samoa in September 2014 (see our Communication at the international Conference held in Paris **Our Common Future Under Climate Change**).*

*The twenty-first session of the Conference of the Parties (COP) and the eleventh session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) took place from 30 November to 12<sup>th</sup> December 2015, in Paris (UNFCCC, online). Concerns of some islanders were summarized in the “Small Islands proposal to stay alive through a “below 1.5°C” global goal for Paris Agreement” (<http://aosis.org/small-islands-propose-below-1-5%CB%9Ac-global-goal-for-paris-agreement/>).*

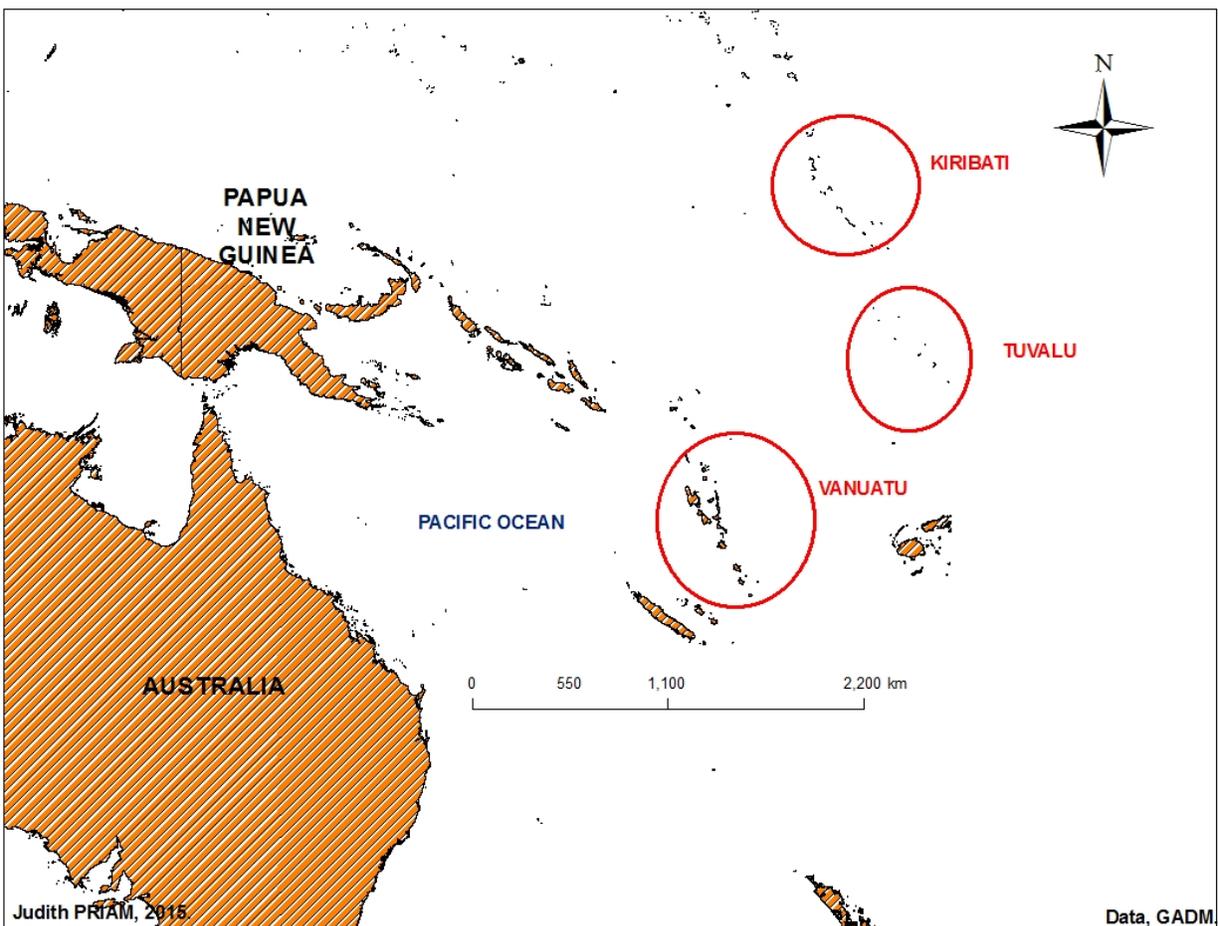
Regarding Islands, in our Master’s degree thesis we discussed the partnership of the Caribbean (ACP Group) within Europe from the Lomé I Convention to the Cotonou Partnership. Specifically, we reviewed the Renewable Energy Transfer to be included in the *Aid for Development*. We had highlighted that there was an *asymmetric relation of power* with Europe (Priam, 2001, p. 22). The creation of AOSIS that included 13 Caribbean Islands (or group of islands), constituted a way to weight in the negotiations to reach sustainable energy, with a total of 43 States and Observers (data acceded in 2001, Priam, p. 23). The reader can refer to Scobie M. (2016), for the state of transposition of the global Climate Change Governance in the Caribbean States’ climate policy.



With regards to the Sea-level rise threat for Islands, we investigated the Media dissemination of information on islanders' environmental forced Migration. We yet stated that the Media are of paramount importance in the development of individual representations of issues (Priam, 2010, Communication, "*Mass Media and Renewable Energy representation by societies*" at the Trondheim Conference, ***Renewable Energy Research –Renewable Energy Beyond 2020***). The Media tend to highlight only some issues among the nebulous amount of Information. For the first insular Climate Migration (ONG TV Novosti, april 2015, *Condenados a desaparecer, países que se hundan frente a nuestros ojos*) due to Sea-level rise (see Map 5), some of them point out ***Tuvalu*** (The New York Times, 2001, *World Briefing Pacific: Tuvalu: Country Ready To Pack Up*; Bérangère Guy, march 2008, *Tuvalu: victime du réchauffement climatique* ; Microsiervos, january 2009, *Las micro islas que no quieren ser engullidas por el océano*; Amelia Holowaty Krales, oct 2011, *As Danger Laps at Its Shores, Tuvalu Pleads for Action*; ¿Ecoosfera?, august 2014, *Llegan a Nueva Zelanda los primeros refugiados por causa del Cambio Climático*; Greg Harman, sept 2014, *Has the great climate change migration already begun?*; Alex Randall, august 2014, *Why New Zealand did not accept 'world's first climate refugees?*; Adele Peters, august 2014, *The World's First Climate Refugees (Sort Of)*), while others mention ***the Kiribati islands***<sup>v</sup> (Kozi Pastakia, sept. 2015, *L'homme qui voulait devenir le premier « réfugié climatique »*; Emma O'Brien, sept 2015, acceded online, *Islander Seeking to Become First Climate Refugee to Be Deported*; Brad Allen, sept 2015, *World's first 'climate refugee' faces deportation*; France Info, sept 2015, *Le premier "réfugié climatique" de la planète*



*renvoyé aux Kiribati*; Tim McDonald, November 2015, *The man who would be the first climate change refugee*; Post Magazine online, nov. 2015, *Ready to bail: Kiribati struggles to keep its population afloat*; Per Liljas, dec 2015, *acceded online, The Paris Climate Deal May Be Too Little, Too Late for the Islanders of Kiribati*), or *Vanuatu*<sup>vi</sup> (Cécile Cassier, nov. 2011, *Les premiers réfugiés climatiques fuient la montée des eaux (Pacifique)*); Noticias de la Ciencia online, nov. 2011, *Los primeros «refugiados climáticos»*).



Map 5: The archipelagos of Vanuatu, Tuvalu and Kiribati in the Pacific.



Actually, the need to resettle people from the Carteret islands was recognized 49 years ago. The Carterets are *part of the Atolls District of the Autonomous Region of Bougainville, a semi-autonomous region composed of several islands located off the east coast of Papua New Guinea* (See Map 6 and Map 7). The atoll is located 86 km north-east of Bougainville and has an area of 0.6 km<sup>2</sup>. The maximum elevation is 1.2 meter above sea-level. We learnt in a report produced by an International Organization (the IOM, International Organization for Migration), that *“losses of sandbanks and shorelines have been reported since the 1960s”* (IOM, 2015); and that *“Initiatives have been undertaken since 1967 to relocate the islanders. In 1995 a wave washed away coastline from Piul and Huene islands [and] Han Island was completely covered”* (after John Seach, *acceded online*, <<http://www.volcanolive.com/tulun.html>>).

In an article published online on 7<sup>th</sup> December 2009, by Tweedie N., in the Telegraph, it is stated:

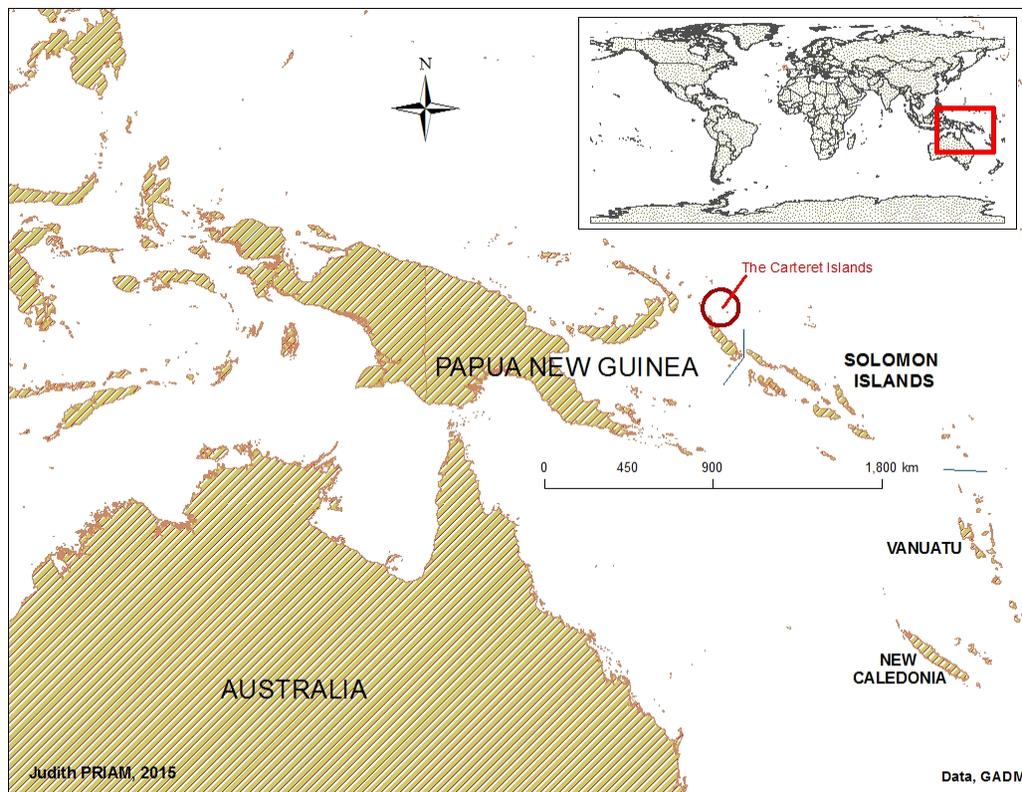
*That tranquil existence is now coming to end. The 2500 or so people who inhabit the tiny chain are set to become some of the world’s first refugees from man-made global warming. Early next year, some 40 families will be uprooted and evacuated from homes which are now at risk of being swamped by the rising sea.*

*The Pacific Ocean, once the islanders’ friend, the source of much of their food, is eating away at the islands, a mere five feet above sea-level at their highest point. The white beaches that made the Carterets a secret idyll are being washed away, while the natural wells and small patches of agricultural land that made them habitable have been*



*contaminated by salt water deposited during the increasingly ferocious king tides that assault them at this time of year.*

*As more new homes are built on the island of Buka, a part of Papua New Guinea, so more islanders will be asked to move by that country's government. Many, particularly the elderly, do not wish to do so, but a diminishing food supply means that even they may soon have to abandon their homes. One forecast suggests the Carterets could be uninhabitable by 2015, the first of many island chains and island nations that will fall victim to polar melting and the thermal expansion of the ocean.* (<http://www.telegraph.co.uk/news/earth/carteret-islands/6752962/The-worlds-first-climate-change-refugees.html>).

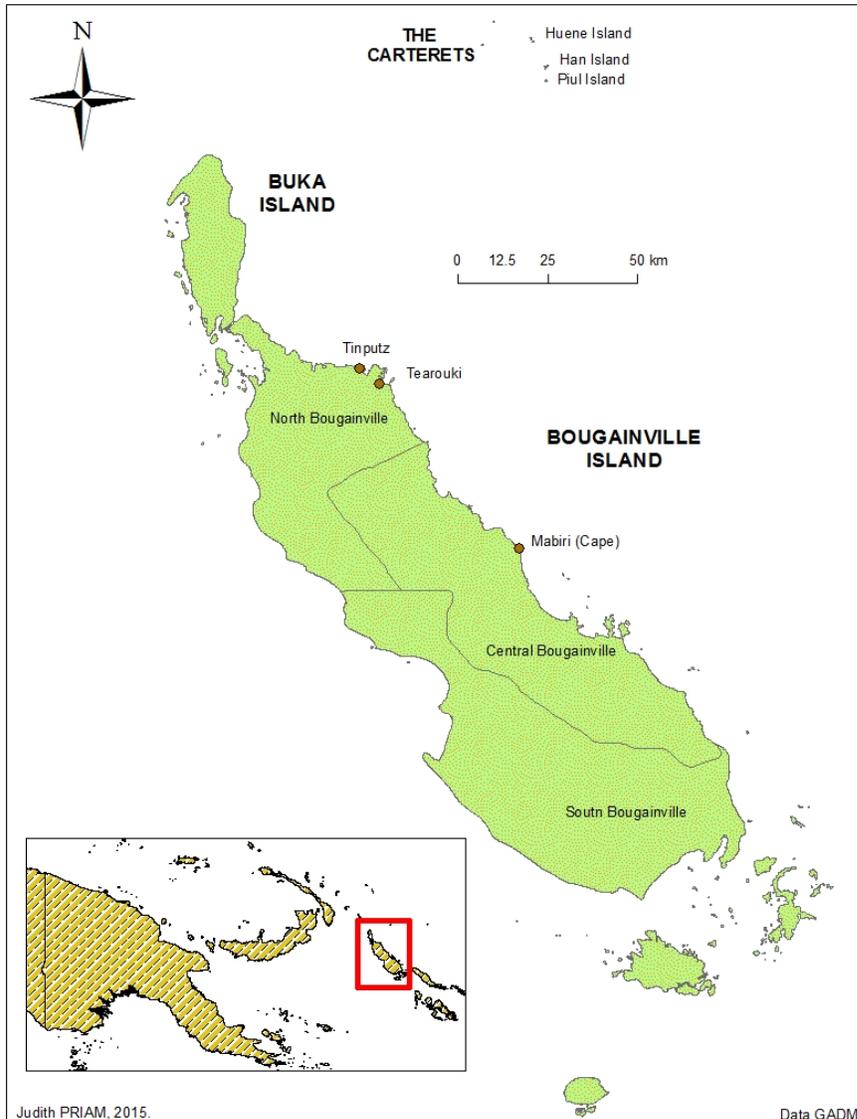




Map 6: The Carterets (said Tuluun islands, or even the Carteret Atoll or Carteret Islands), are located 86 km north-east of Bougainville.

There appeared to be no consensus about the reasons explaining the need to resettle: *“In reality, a combination of a number of complex and interrelated factors –environmental, climatic, geological and demographic – is involved in creating a situation that people cannot remain in their traditional homelands (Farrell, 2009)” –cited by IOM, 2015-.*

The creation by the provincial Government of an *Atolls Resettlement Committee* in 1982, materialized a movement to take action. Negotiation to relocate and find land in the biggest islands of Bougainville was a long process. A leader of the islanders, Ursula Rakova, then decided to create an NGO in 2006, *Tulele Peisa*, self-empowerment to find solutions and means *“sailing the waves on our own”*. *Tulele Peisa* developed the *Carteret Integrated Relocation Project (CIRP)* and aims to relocate approximately 1,700 Islanders to mainland Bougainville. *The Roman Catholic Church of Bougainville has donated land at Tinputz, Tearouki and Mabiri to Tulele Peisa* (Tulele Peisa, 2011). The movement to Tinputz started in 2009 (see Map 7).



Map 7: The Carteret Islands, home of 2500 inhabitants; are located North-East of Buka Island. Han is the biggest island of the Carteret Islands atoll. Meanwhile Huene has been separated by sea level rise into two islands: the Carterets became a seven islands atoll in the 80s (Rakova U., 2009).

Our two points allow some concluding remarks regarding Governance, which we argue is harnessed to Transparency.

**Conclusion**



Governance and Transparency are embedded within the International Level and in our opinion have resulted in uncertainty about natural and social ecosystems interrelations. The *Precautionary Principle* has been defined for that purpose. In fact, environmental problems and issues have to be considered in an integral manner, and at a large scale, because of transboundary connectors: water (rivers, the sea, clouds, etc....), air, transport (by plane, cars, railroads, ships, animal and plant dispersal, soils properties and stratification ...) etc....

We argue that to include citizens in decision making is positive, but on the other hand could conduce to what we call, a *Dilution of Responsibility*. We foresee that Governments could argue they are not responsible for having defined and applied bad policies. In fact, ways to include Societies conduce to the Governance process. Responsibility for errors could become the apparent responsibility of all, even of people partially participating in the decision making process. The extreme case for people would be to not take part; which could be interpreted as a validation of projects or policies proposed and accessible in a governance process. In few words, to say nothing or do nothing would mean to validate proposals made by Governments. In Figure 3, we present a synthesis of a transition from a powerful State to Governance in decision making. If under the *Convention on Biological Biodiversity*, the principle of sovereign rights of States is recognized, Governance is involved. Two levels must be distinguished under Governance: the external one (multistate, IOs and NGOs), and the internal one which means all potential and involved actors in the governance process that are part of the Societies (Priam Judith, 2008). Then, information access through 1) transparent processes, 2) Media and the Internet; constitutes the flow of Information that gives life to Governance processes (see Figure 4).

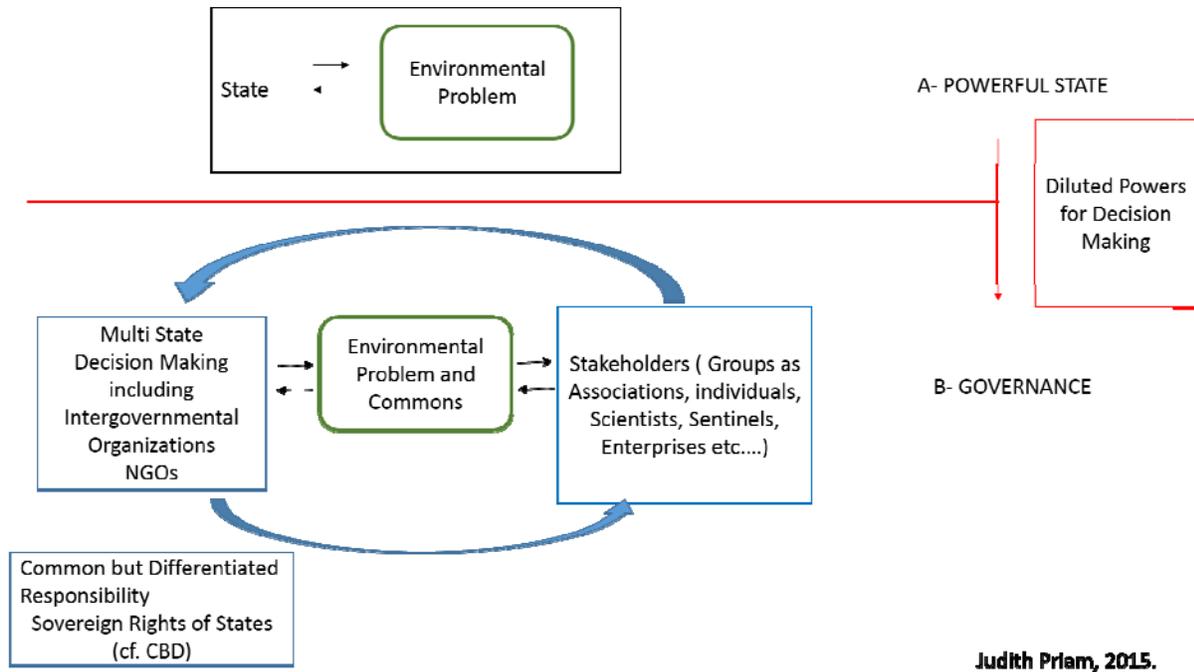


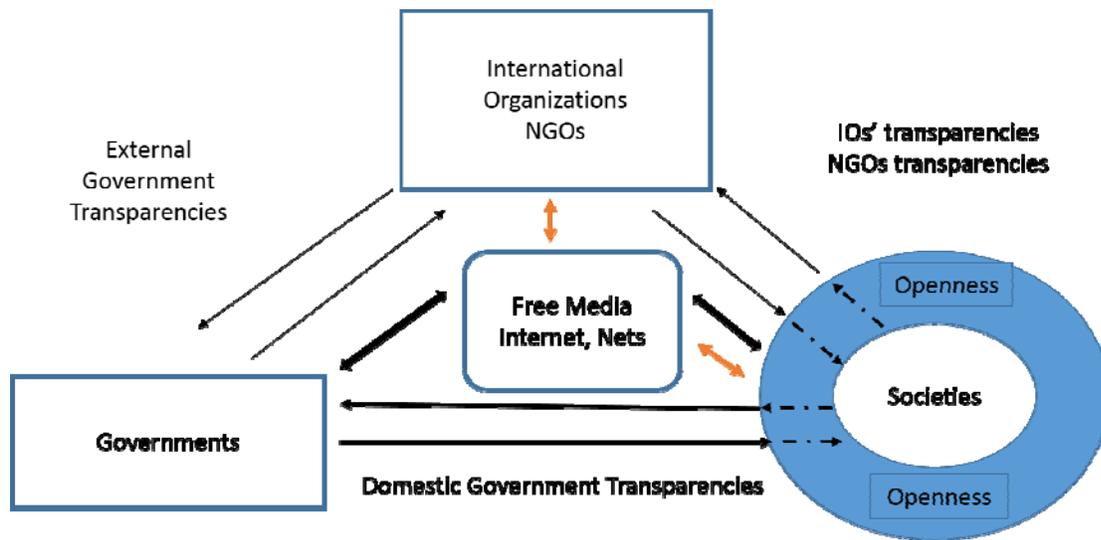
Figure 3: Environmental problems show a big shift from powerful States to Governance that translates into what we call a *Dilution of Responsibility* in decision making. We can foresee decision making and errors regarding the environment to be attributed to an abstract “humankind” actor.

On the above part (A) in Figure 3, environmental problems are treated by a powerful State. Since 1972, governance processes (B) evolved into new decision making processes. We foresee that diluted powers will lead to diluted responsibility.

As stated Grigorescu, citing Dahl (1971): “a key characteristic of democracy is the continued responsiveness of the government to the preferences of its citizens”. We represent the shift on Figure 4, where we adapt Figure 1 by pluralizing Government, Society and IO; and adding NGOs, Media and Internet; to represent the new context. Action upon environmental issues by Governments instead of Government, Societies instead of Society and IOs, would correspond to the approach of Roche J-J who distinguished in 1999 (p. 216) the *international society*, that is,



the society of States; from the *World Society* (in French, la Société-Monde) that corresponds to the *Society of People*. In the first case, the association expresses interest and behavior under standards; and in the second, Humans are united by a shared future and common values (our translation). The pillar for governance processes then would be Transparency through the flow of Information.



Judith Priam, 2015 (Adapted from Grigorescu, 2003, p. 645)

Figure 4: Governance and Transparency become the pillars of decision making rules in Democracy. Free Media and Social Nets (virtual or not) and a rapid information access allow a shift to global considerations by Societies and Governments.

We observe recently the use of some Local Referendum processes in France. As an example, the President proposed a referendum about a controversial project stalled since 2012. According to Le Monde he said on the 11<sup>th</sup> of February, 2016:



*If this is yes and the population want that airport, so everybody will have to accept that decision. If that is no, for that project from the Government, then the Government will have to learn.*

Then, the problem is the delimitation of the population to be included by the Government. Some Presidents of Departments in the boundaries of the above mentioned project are asking to be included (Le Monde, 19<sup>th</sup> of February 2016, <  
[http://www.lemonde.fr/planete/article/2016/02/19/notre-dame-des-landes-quatre-departements-limitrophes-reclament-de-participer-au-referendum\\_4868530\\_3244.html](http://www.lemonde.fr/planete/article/2016/02/19/notre-dame-des-landes-quatre-departements-limitrophes-reclament-de-participer-au-referendum_4868530_3244.html)>).

Another important step regarding access to Information is the free access for citizens to scientific articles that now are only freely available to researchers through their professional account and to those who pay. Some changes are on the way because more researchers want to provide access to their investigation. The cost of each scientific article is from 25 to over 50 dollars. We can't ask citizens to take part in the Governance of Humans within Nature without that kind of total access to the relevant scientific facts. The database accessible through *Google Scholar* ([www. http://scholar.google.com/](http://scholar.google.com/)) is an example of ongoing changes; as well as some Open Access journals.

If we refer to the experts of the IPCC, who had to mention among the Literature the three most important that influenced study about Climate Change, we learn that they highlighted the one published in 1967 by Manabe S. and Wetherald R. in the Journal of Atmospheric Sciences (Dufresne J-L, Journé V., 2015).



Furthermore, some Public Establishments allow people to be part of the generation of data and other information. See for example the initiative of the French *National Museum of Natural History* regarding biodiversity that was launched twenty years ago (<http://www.mnhn.fr/fr/participez/contribuez-sciences-participatives>, our translation):

*Citizens' contribution to scientific knowledge is today of paramount importance. In fact, the participation of volunteers allows to generate large amounts of data in the whole territory and in a cumulative way. That data couldn't have been collected by researchers alone.*

In that context, for the French *National Inventory of the Natural Patrimony – Inventaire National du Patrimoine Naturel, INPN*- there are two ways to participate: as an expert or non-expert (<https://inpn.mnhn.fr/accueil/participer>). The *INPN* depends on the data managed by the *Secretariat of the Fauna and Flora (SFF) of the MNHN*, since 1979. It was initiated in 2003 and launched in 2005, and we learn that :

*Article L 411-5 of the Environmental Code establishes for the entire land, river and marine territory a national inventory of natural heritage, defined as "an inventory of ecological, fauna, flora, geological, mineralogical and palaeontological resources".*

*The State ensures its design, animation and assessment. Regions can be associated with the implementation of the inventory within the limits of their skills. The Muséum National d'Histoire Naturelle (MNHN) ensures the scientific responsibility of the inventories executed within this framework.*



*INPN is a system implemented to ensure in a standardised way the restitution of synthetic data needed for the expertise, the development of conservation strategies and the dissemination of information and national and international reports relating to the French natural heritage (plant and animal species, natural habitats and geological heritage) (<https://inpn.mnhn.fr/accueil/presentation-inpn?lg=en>).*

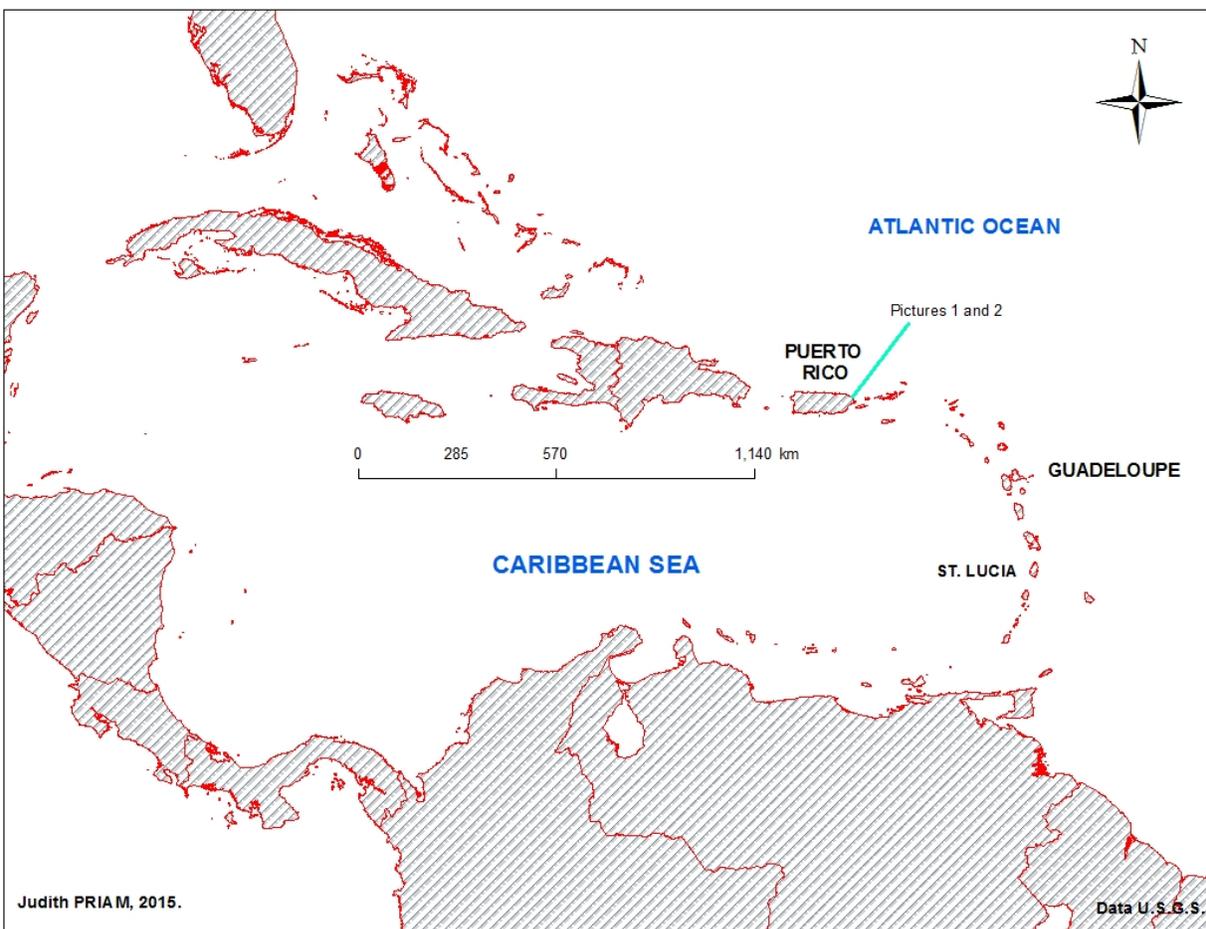
A French Environmental Portal that allows an easier access to Information was launched in July 2009 in the context of the Aarhus Convention. By the way some websites provide information regarding one specific domain. This is the case for example of BASIAS, the *Historical Inventory of Industrial Sites and Services' Activities* (<http://basias.brgm.fr/>), BASOL, the *Database about Soils' Pollution in France* (<http://basol.developpement-durable.gouv.fr/>).

As previously highlighted regarding insular migrations due to Sea-level rise, the case of the Carteret islands is scarcely mentioned. See for example Judith Eisinger, may 2015, *Calentamiento global: las primeras islas del Pacífico sumergidas* (our translation for [http://www.lejournalinternational.fr/Calentamiento-global-las-primeras-islas-del-Pacifico-sumergidas\\_a2697.html](http://www.lejournalinternational.fr/Calentamiento-global-las-primeras-islas-del-Pacifico-sumergidas_a2697.html)) :

*The Carteret Islands; a group of small islands that belongs to Papua New Guinea; are disappearing [...] Islanders must leave their houses to shelter.*



The question then is: on islands with a territorial extension that allows internal migration, would we still build on the coastal zone if societies associated this zone to risks? The fact is that some islanders in the coastal zone no longer consider it a privilege to live in front of the sea (pers. comm., inhabitants of Puerto Rico). A comparison of the coastal line changes in time can justify their change of mind. For example, we compare a July 2006 picture of one in north-east Puerto Rico (located in the Caribbean, see Map 8), with one which we took ten years later, at beginning of 2016 (see pictures 1 and 2). Any observer of these pictures can readily perceive a real risk of losing a coastal property due to Sea-level rise through said 10-year period.





Map 8: Puerto Rico (PR), Guadeloupe and St-Lucia in the Caribbean. We indicate with the blue line the location of pictures 1 and 2.



Picture 1 and 2: The Coastal Zone in July 2006 (on the left), north-east of Puerto Rico and in January 2016 (on the right). *Picture 1* is under the courtesy of owner of the picture.

The interviews we carried out on the island in commercial centers demonstrate that some individuals recognize that the Government of Puerto Rico provided information about that threat many years ago.

On Caribbean islands, more and more effects of the sea on the coastal zone are perceived; but Media traduced largely that fact through potential threat for tourism and beaches (See Picture 3).



Picture 3: A picture of beach erosion in Grande-Terre (Guadeloupe, beginnings of 2016, picture of the author).

In September 2014, an article from the *World Bank* online, entitled “*Can you imagine a Caribbean minus its beaches? It's not science fiction, it's Climate Change*” (<http://www.worldbank.org/en/news/feature/2014/09/05/can-you-imagine-a-caribbean-minus-its-beaches-climate-change-sids>), revealed that:

*Nearly 15 years ago, a World Bank disaster risk management team went to the Caribbean island of St. Lucia to work at the beach -- literally. Based on scientific evidence, they set off, together with the government, to counter erosion and rebuild the beaches. The result, the construction of two submerged offshore structures, designed to break up incoming waves and capture sand. Today, 15 meters of beach in the area have been restored.*

*This success story is part of an effort to tackle the Caribbean coastal erosion. Due to rising sea levels and recurring storms, most Caribbean nations have been seeing their beaches*



*disappear. In some areas of St. Vincent, for instance, an estimated 18-30 meters of beach have been lost over the last nine years. The highly vulnerable coastal strand and adjacent towns are fighting against increased flood risk from rainfall and storm surge.*

*[...]*

*And the beaches are not the only concern. Caribbean ports are also at risk from rising sea levels. Built in colonial times, many sea ports, such as Castries, St. Lucia; St. Georges, Grenada; Kingstown, St Vincent, are suffering from the increasing threat of flooding, in part due to rising sea level. In island states, ports are the economic heart of the country, typically the capital and the island center of commerce.*

*Airports too are affected. Typically built in flat coastal areas, airports such as Melville Hall, Dominica; Maurice Bishop, Grenada; and Hewannorrah, St Lucia, are dealing with increased flood risk and sea level rise”.*

Many studies focus on the link between storms, hurricanes, bad weather conditions or Sea-level rise within the coastal zone. See, for example, Leatherman S.P. and Nicholls R. J.; who published the introductory article to a special issue of the *Journal of Coastal Research* in 1995 dedicated to the “*Potential Impacts of Accelerated Sea-Level Rise on Developing Countries*”. They wrote in their introduction:

*“Accelerated sea-level rise is one of the more certain consequences of global warming. While detailed impact assessments have been undertaken in many industrial countries (e.g., GOEMANS, 1986; TITUS et al, 1991), much less research has been conducted in developing countries”.*



In 1997, Leatherman S.P and Beller-Simms N., wrote the introductory article for a special issue number 24 of the Journal of Coastal Research entitled “*Island States at Risk: Global Climate Change, Development and Population*”:

*“Small island States are the most vulnerable of all coastal areas to global climate change and accelerated sea-level rise. Many of these countries with limited resource bases are ill equipped to handle existing environmental problems such as explosive population growth, overdevelopment and pollution. These problems will only worsen as the coastal impacts of land submergence, beach erosion, increased storm flooding, high water tables, and reduced fresh water supply take their toll. Such changes will make these small land masses, many at or near existing sea level, less habitable for humans, resulting in off-island migration.*

*Scientific research and effective public dissemination of this research are being expanded through the U.S. Country Studies Program for a number of small island states, including the Federated States of Micronesia, Western Samoa, Fiji, Kiribati, Marshall Islands, Sri Lanka, and Mauritius. The Caribbean nations are developing similar programs through the Caribbean Planning for Adaptation to Climate Change Program. Sea-level rise impacts on existing and planned development should be considered holistically through integrated coastal zone management”.*

Then, the lector may refer to Schwartz M. (2005) who presented his analysis of “Sea-Level influence on Coastal Caribbean Erosion”.



Furthermore, the *International Scientific Council for Island Development*<sup>vii</sup> (INSULA, c/o MAB-UNESCO) resulted in the will of the *U.N.E.S.C.O.* and partners to address Island issues. It was created in November 1989 and since the first issue of the *International Journal of Island Affairs* published in Spring 1992, we can refer to a special ‘dossier’ entitled “*Global Warming and Sea-Level Rise*” with the articles done by Baud M-F. (*The UNESCO Programme: Satellite Monitoring Sea-Level Rise*); Connell J. (*The Problems of the Atoll States: Meeting the threat of Global Warming*); and an abstract of a report done by the UNESCO COMAR working group on sea-level rise and its influence on the coastal zone.

Regarding access to information, Roche J-J. (1999, p. 261) stated that Internet confirms *intuitions of John Burton (“the spider’s web”) and Marshal McLuhan (“the planetary village”)*. But considerations on internet access must be discussed carefully. We think that information from the internet presents its own limitations as it requires the ability to use a computer as well as an access to an internet connection. Some physically disabled people may be excluded. We consider then that citizens should have some free internet access in governmental offices dealing with the Environment. Another fact is the gap between the availability of information, and the “individual” interest on some issues along a life time. Then some information’s access require to know “the way” to accede it. Independently of the amount of information available, it may not be acceded until a personal or a network interest on it arises.

Further, we can imagine that some Local Media don’t have the capacity to deal with the huge flow of information. Then they transmit the same information provided by the most



important Media. These limitations may result in a quasi-monopolistic control and biased creation of opinions. For example, in places where there is only one University and few Local Media, we encounter a limited evaluation of issues without a real debate about the complexity that is concomitant with environmental issues. At such local scale, someone with ready access to Media but with scant scientific information can be treated as an expert, while scientists and experienced people may not have equal access to the Media (pers. comm., Member of an Association in Guadeloupe, 2015). As stated by U. Beck (p. 55), *the critical position and wonderings of the public opinion nourish themselves essentially on the dialectic of expertise and against-expertise. [...] Without a social rationality, the scientific rationality stays empty; and without a scientific rationality, the social rationality stays blind.* In some small islands, the required knowledge of local conditions hasn't been developed by researchers at the University level. Even if they have a responsibility vis-à-vis a society, some important data may never be available. That means that the information gathered in recent years will constitute the *reference point* to understand ongoing phenomena. We foresee then how cooperation is of paramount importance within a Region to fill gaps of knowledge. As an example, the University in Guadeloupe was established in the 70's; precisely during a phase of important developments regarding environmental issues at the International Level. Nowadays, the Environment can be seen by some opportunistic actors as a new field to obtain economic benefits, even if they do not have expertise on it. Some actors may even change their true field of knowledge to move to the more economically attractive emerging field.



IOs and NGOs should produce synthetic publications to facilitate worldwide dissemination of knowledge that could be included in Local Media (see orange arrow on figure 3). Finally some Local Media lacks specialized journalists in the environmental field that even produce misinterpretations.

Internet disclosure of information can be questionable. An important feature is the date of production of the information or its disclosure. We may even read the last updated data, without knowing precisely what has been updated, and when. On the opposite an article or a paper book must include a date of publication. Some website' pages appear from one day to another, presenting some old facts. This means that to provide the information on the Internet, without indicating since when it is available on the website, modifies the reality of its real accessibility. We foresee that the validation of the dates should go through independent International Institutions or Organizations. Could we imagine a kind of filter that attributes an automatic date? Another remark can be made at the level of libraries. We can expect that a library's database should indicate when a book is physically or electronically available. In fact this data is unavailable to the public (pers. comm., from a librarian in Guadeloupe). We consider that this data is of paramount importance, since the availability of books can open or close some opportunities of reflection.

Finally, in Figure 5 we present our hypothesis about the shift in perception of risk by Humans.

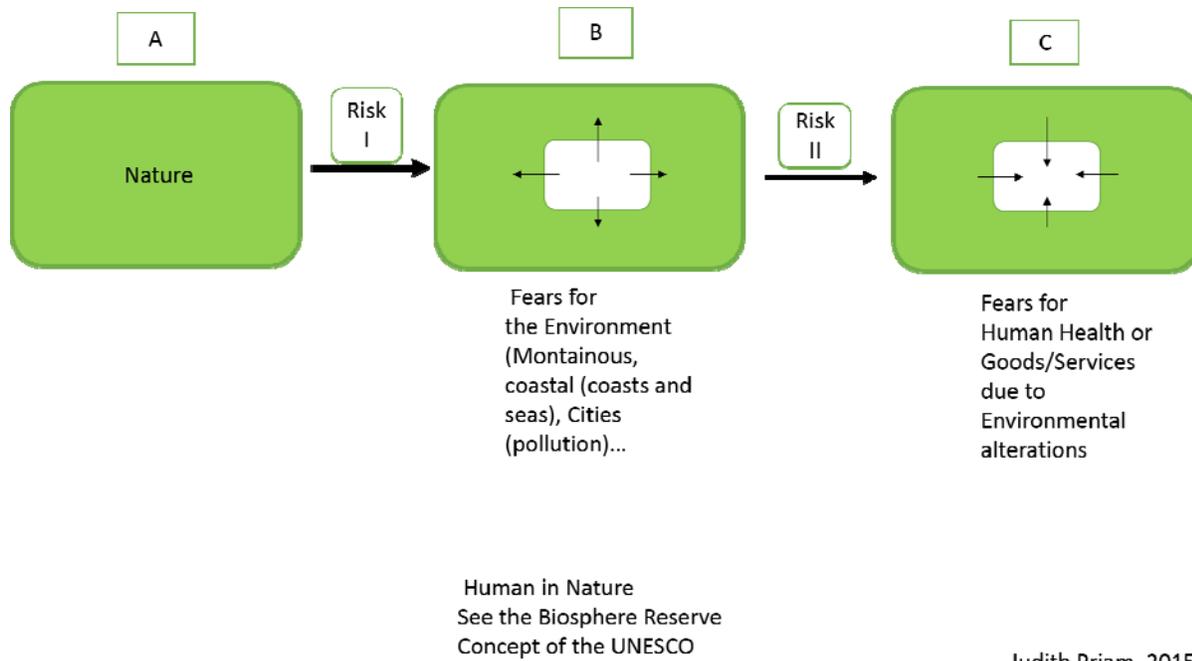


Figure 5: From Nature (A) to Humans in Nature where Nature becomes the Environment (B and C), we identify a shift in human perception from fears for the Environment (Risk I) to fears for Humans (see human health) or for Goods/Services provided to Humans due to Environmental alterations (Risk II).

Concerns about the Environment, its degradation and impacts on human health (see B on the Figure), have shifted towards changes in the Earth System Dynamic Equilibrium that can generate global effects on humans and human health –see C- (as to Chikungunya, Zika, H1N1 etc....) or goods/services (see the Sea-level rise and relocation of people; loss of potential medicines and environmental services related to biodiversity loss, etc....). Nature is considered through a utilitarian view supposedly vested of environmental conservation purposes (see for example the Environmental Services provided by mangroves or coral reefs regarding tsunamis and wave effects...). We are very far from the recognized *Values of Existence of Nature* through Landscape and Beauty (see the *Deep Ecology* current), as opposed to the strictly utilitarian



approach. As in other periods in the history of humanity, we could enter into another era of accelerated destruction of remnant Nature. For example, if migrating birds could generate health problems to Humans, would they be killed? We would enter into another stage of an anthropocentric view that will drive another irreversible period of destruction of Nature.

In regards Protected Areas on Islands and Sea-level rise, mainly located in mountainous and coastal regions, we wonder if relocation from coastal zones will be to the mountainous protected areas (Priam, 2014, CM2E Conference).

In France the recent emphasis of Media about 1) chemicals as *endocrine disruptors* due to pollution (in food, in clothes, in water, in the air...) or 2) *Climate Change*; can make one be used with those issues. We are wondering if it conducts to a fatalism of individuals and a resignation of Societies (consumers' pers. comm. about household appliances' programmed obsolescence). Regarding Climate Change, even some press' sellers are astonished and afraid (pers. comm., Guadeloupe, 2009 and 2012, see Map 8).

We ask ourselves about how psychologically efficient is the way that Media use for disclosure of this kind of information. Can it drive to immobilization of people? In fact, Media provide this information through special reports: daily, weekly or monthly. Then, there is a real threat to the effective integration by the public of the type and amount of said information.

Furthermore, if people don't move, do we all become in fault when we do not look for solutions? Is the *window of opportunity*<sup>viii</sup> provided to people during governance processes adequate and sufficient?



The International Risk Governance Council stated that:

*Because the evolution of governance mechanisms occurs much more slowly than the processes driving technological and social change, there are serious concerns from governments, the private sector, as well as the general public about the lack of governance mechanisms to efficiently deal with risks (such as climate change and biodiversity loss); to resolve trade-offs between diverse, sometimes conflicting, needs and interests (such as those that have encouraged the development of biofuel production); or to deal with potential risks from new technologies in the context of global trade (for example, nanoparticles and food additives).*

*Policymakers have subsequently become increasingly conscious of the importance of risk communication and of meeting public expectations of risk governance* (<http://www.irgc.org/risk-governance/what-is-risk-governance/>)

The Risk concept includes a quantification of substantial effects. It implies that the effects are known and that there is consensus on what is acceptable. In many cases the potential effects are not known because the economic approach is that it would be too expensive to determine. Therefore in many instances a displacement from research to statistical, speculative, approaches of dubious validity has taken place. On the other hand the question is: acceptable to whom with what information? This could be the subject of another article.

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<sup>i</sup> Elements of that Point 1-1 had been included in an unpublished article submitted to the Managing Editor of the Journal of Eastern Caribbean Studies in March 2009.

<sup>ii</sup> Europe is polymorph regarding the Organization or Institution to consider.

<sup>iii</sup> *It is one of five regional commissions of the United Nations. The others are the :*

*Economic Commission for Africa (ECA),*

*Economic and Social Commission for Asia and the Pacific (ESCAP),*

*Economic Commission for Latin America and the Caribbean (ECLAC),*

*Economic and Social Commission for Western Asia (ESCWA).* (<http://www.unece.org/mission.html>).

<sup>iv</sup> In France, until 2008, three Conferences of Citizens have been organized, related to Genetically Modified Organism in 1998, to climate changes in 2002, and future of sewage sludge in 2003 (after Narbey and Raunet, p. 858).

<sup>v</sup> The Kiribati consists of 33 coral islands divided among three island groups: the Gilbert Islands, the Phoenix Islands, and the Line Islands (<http://www.kiribatitourism.gov.ki/index.php/aboutkiribati>). We represented only the Gilbert Group, on Map 5.

<sup>vi</sup> Some recent articles consider the juridical aspect of recognition of migration, and not the geographical fact.

<sup>vii</sup> See D' Ayala P. G., *Le programme INSULA de l'UNESCO* in Fernandez Martin F., 1999.

<sup>viii</sup> What we call a *window of opportunity* is related to our discussion about Governance processes. People can express their opinion and analysis in a limited framework at Public Hearings (Enquête Publique, in French). For example in the French Public Hearings process people can express for around 30 days in writing their opinion regarding a project in a notebook called the *Registre d'Enquête Publique*, or express it to the President of the Public Hearings (the *Commissaire Enquêteur*) during certain indicated hours and days for around 4 days. This is different from the *Opportunity window* (in French Fenêtre d'opportunité) defined by John W. Kingdon in 1984 (see Pauline Ravinet, 2010, in *Dictionnaire des politiques publiques*, pp. 274-282; Pierre Muller, Yves Surel, 1998, *L'analyse des politiques publiques*, pp. 73-77).