Renewal Information
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Iceland
Catastrophe Insurance

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Photos:
Cover photo: *Landmannalaugar* - Simon Dannhauer
Page 3: *Reykjavík* - Nikolay Tsuguliev
Pages 6&7: *Lake Mývatn* - Alexeys
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Page 12: *Strokkur, South Iceland* - FelixR
Page 13: Sylvia Adams

Introduction

The Iceland Catastrophe Insurance (ICI) was founded in 1975 as a public undertaking by a special Act of the Althing (parliament) of Iceland. The ICI functions as an insurance company. The purchase of catastrophe insurance for an earthquake, volcanic eruption, snow avalanches, landslides and floods is compulsory for all buildings as well as for contents insured against fire. Buildings are insured according to their valuation for fire insurance as assessed by the State Land Registry. Since fire insurance of buildings is compulsory in Iceland all buildings are likewise insured against natural perils covered by the programme.

Insurance Cover

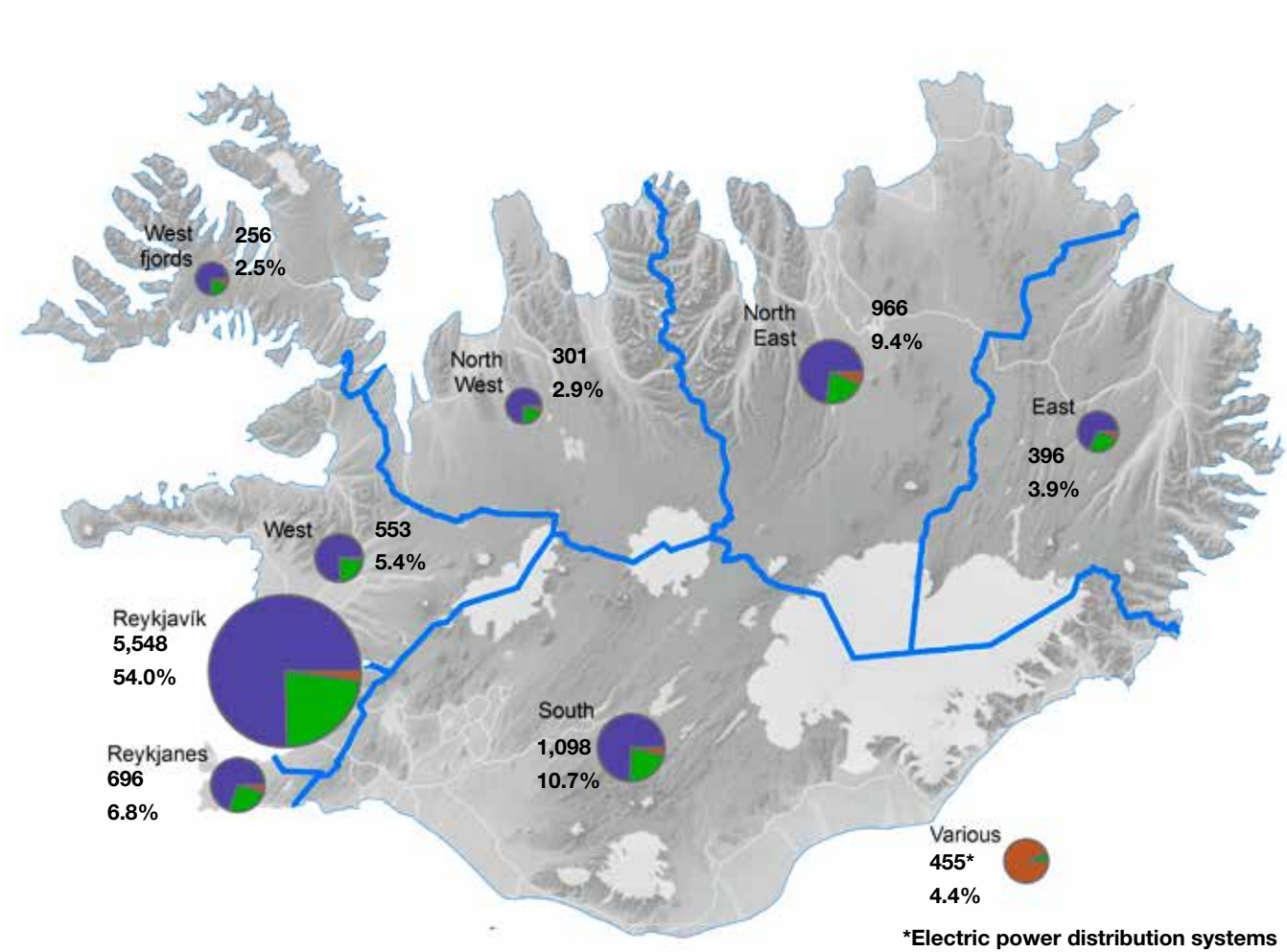
The catastrophe cover is a stand-alone policy; the fire insurance companies collect the premiums alongside fire premiums in exchange for a collection fee.

There is a single premium of 0.25 ‰. Infrastructure lifelines - waterworks, geothermal heating systems, sewage systems, electric installations, bridges and harbour installations - not generally insured against fire, are insured separately with the corporation. The premium is 0.2 ‰ for lifelines. The policy only insures against direct losses resulting from the catastrophes mentioned above. There is a deductible of 5% for each loss as well as a minimum deductible.

Sum of Insured Aggregates

In September 2015 the value of the aggregates insured by the Iceland Catastrophe Insurance was about ISK 10,268 billion.

The ICI has in recent years increasingly emphasized the assessment of insurance risk. More detailed risk assessment has among other things resulted in better information being provided to reinsurers.



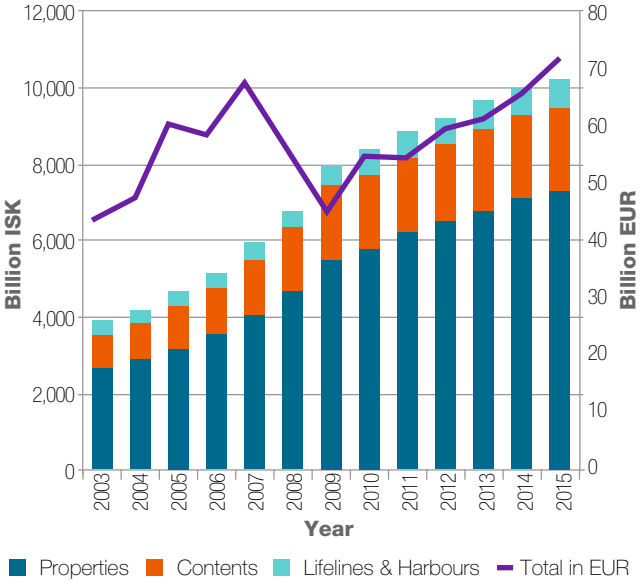
***Electric power distribution systems**

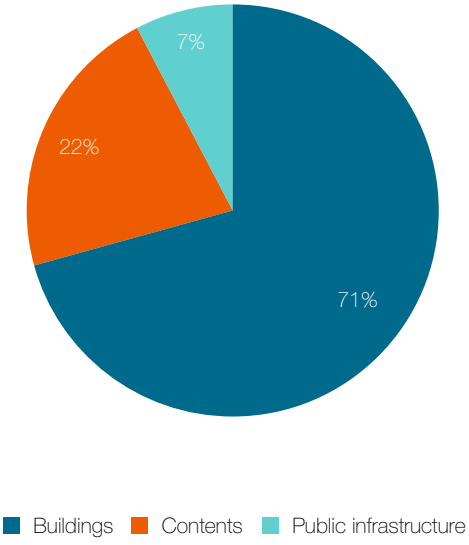
Values in Billion ISK

Value of Insured Aggregates

The total value of the aggregates insured by the ICI as about ISK 10,268 billion as at September 2015. Properties account for about ISK 7,277 billion (71%), contents for about ISK 2,242 billion (22%) and public infrastructure for about ISK 748 billion (7%). The increase of total insured aggregates from September 2014 to September 2015 was 2.4%.

The following chart shows the insurance value divided between buildings, contents and public infrastructure.

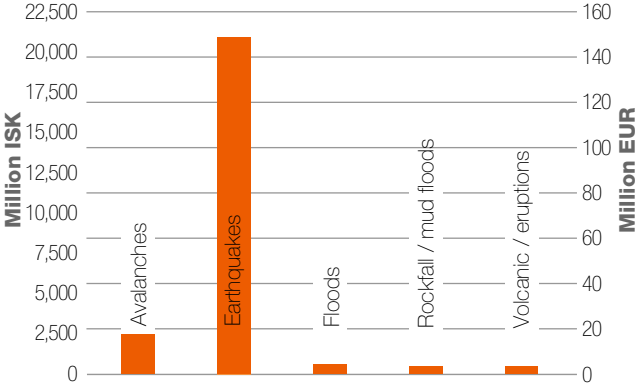




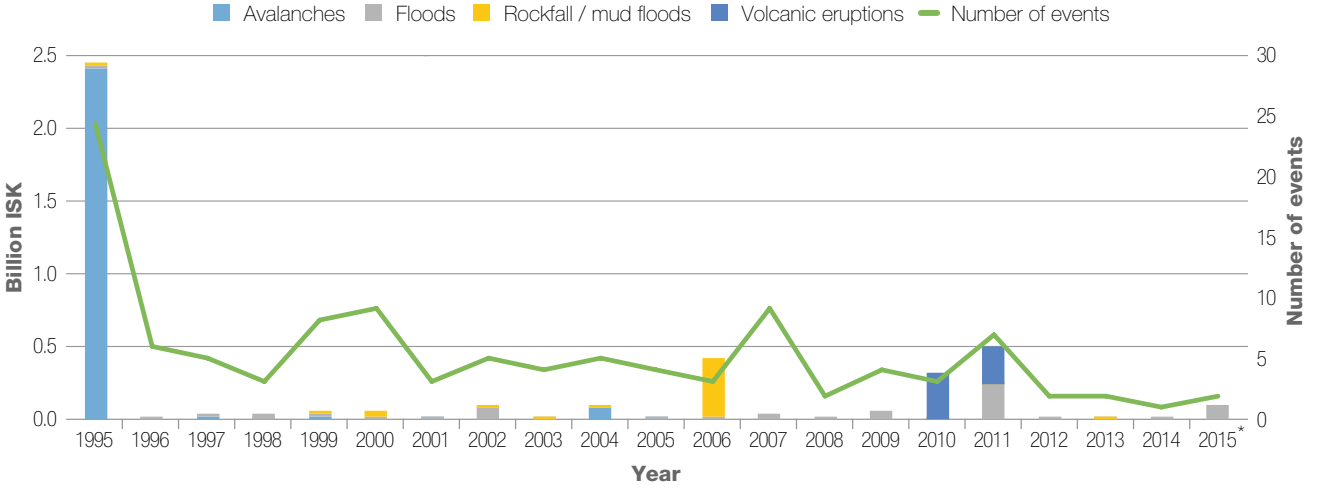
Losses by Events 1995-2015

Since last year we have put much emphasis on collecting data from previous events going back to 1995. With our transparency policy in mind, all values have been calculated to show approximate present value according to the building cost index in Iceland. Vast majority of losses is caused by earthquakes. The present day value of the 2000 earthquakes is about 7.6 billion ISK (53.2 million EUR) and the estimated present day value of the 2008 earthquake is 13.3 billion ISK (92.4 million EUR).

In the last 20 years 27 avalanches have occurred in Iceland. Four of the fourteen avalanches that occurred in the year 1995 caused 88% of all losses due to avalanches in the last 20 years. Since the year 1995 most of known avalanche channels have been blocked by revetments such as shown on the picture below. Therefore the reinsurance programme is geared around earthquakes.

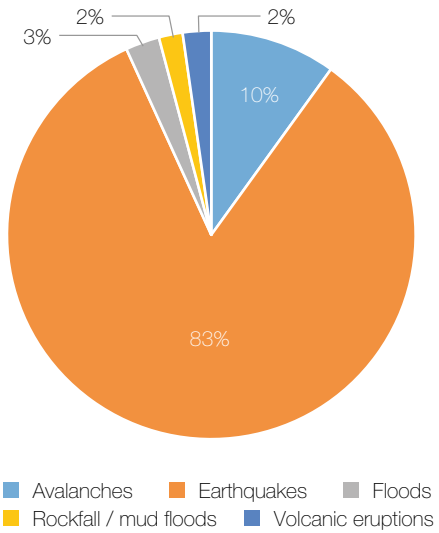


The figure below shows all losses and number of events excluding earthquakes. By excluding the earthquakes it is easier to show the frequency and sums of attritional losses. The losses have been indexed according to the building cost index in order to show approximate present-day values.



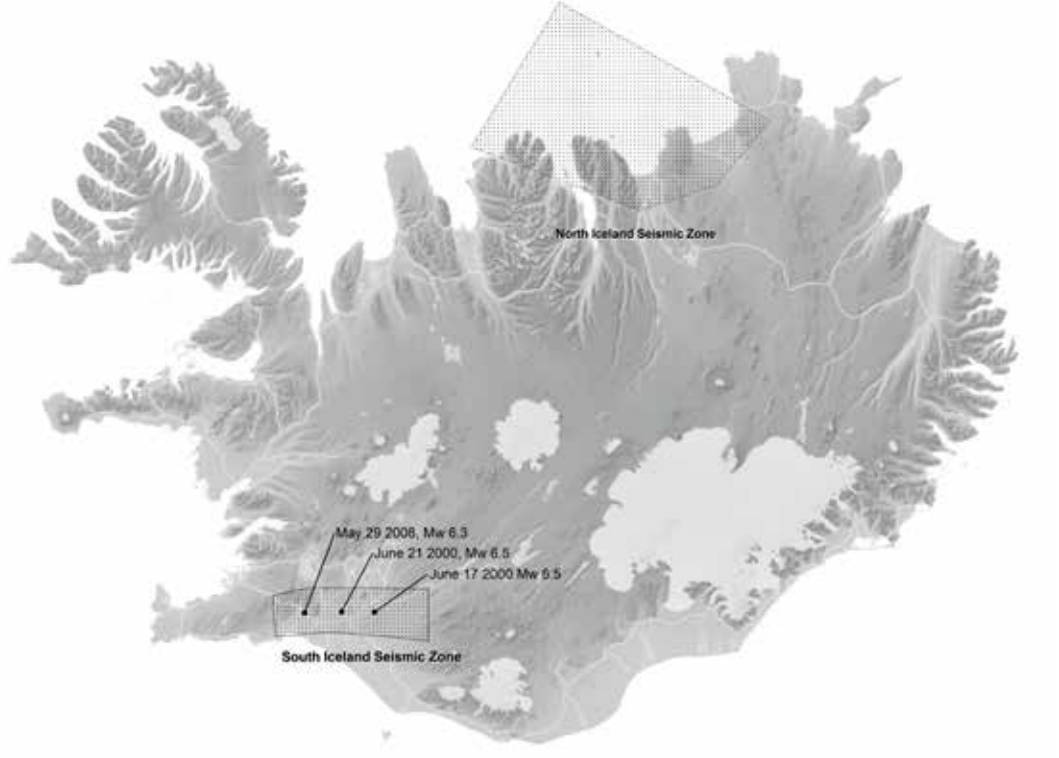
Losses by Type 1995-2015

The vast majority of losses in last 20 years is due to the earthquake in May 2008 and June 2000, accounting for about 83% of the total loss. All amounts include the cost of loss compensation, assessment cost and attorney fees.



Earthquake Hazard

Iceland is a large country but sparsely populated with human habitation scattered around the coastline. The main concentration of aggregates is in the Capital Area of Reykjavík which taken as a whole comprises about 56% of the total aggregate values covered by the programme. There are two main earthquake hazard areas in Iceland: The South Iceland Seismic Zone (SISZ) and the North Iceland Seismic Zone (NISZ). Areas in both SISZ and NISZ with insured assets likely to be affected by major earthquakes share about 10% of the total asset values in Iceland. Both are largely rural areas. In terms of percentages 10.5% of the total asset values are located in the Southern Region. About 25% of these are located in areas not likely to be affected by a major earthquake. South Iceland covers the largest agricultural region in Iceland, i.e. the South Iceland Lowland (SIL). Several small towns or villages, schools, medical centres, industrial plants, geothermal and hydropower plants and several major bridges are within this area. The North East region, with about 30,000 inhabitants, has a similar structure to the Southern Region and a share of 9.7% of the total asset values. The principal town of Akureyri and surrounding rural area account for 65% of these values and is not in the seismic area. There was a sizable earthquake in the North East in 1976 after the Fund came into being, but damage was negligible.

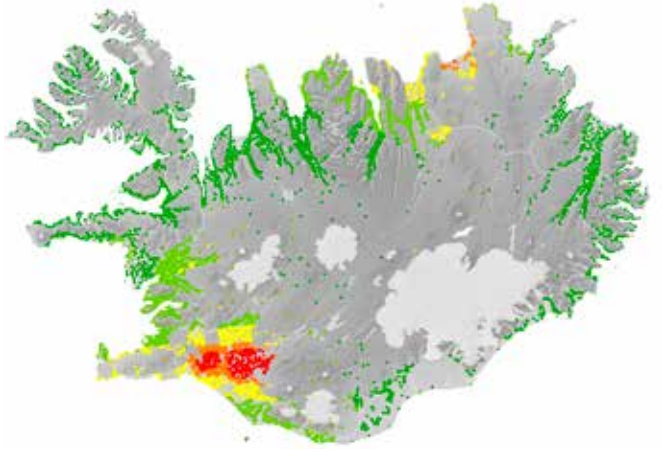


Iceland Catastrophe Insurance Risk Modelling

Methodology:

1. The hazard module (probabilistic seismic hazard analysis) was built by state-of-the-art techniques by ICI in cooperation with local experts which have a strong track record in the field of earthquake engineering and geophysics. A catalogue from the Icelandic Mete orological Office of recorded earthquakes back to 1926 and historical earthquakes back to the year 1700 is used in the analysis.
2. The Land Registry (Iceland Registers) supplied the building database including detailed information of all buildings in Iceland. All building types are classified into 19 descriptive classes. Detailed information of contents (values and geographical location) is also included.
3. Vulnerability functions (damage/loss functions) were derived for the 19 building classes and the contents by working with the collected data from the comprehensive damage surveys following the 2008 earthquake.
4. Finally, a fully probabilistic model for Iceland based on the components above is used to compute the insurance risk.
5. In addition to the probabilistic modelling exercise ICI has developed a quick response deterministic model that can model specific events. The model can estimate major historical earthquakes and can also be used to verify by sampling the results of the probabilistic model. Furthermore the quick response model is useful for claim management of the ICI.

The following image is an example of information from the model showing the different earthquake intensities (PGA) that buildings can be expected to be subjected to during earthquakes. Dark green pix-els are buildings where the risk of seismic load is almost negligible, even in the long term. Red dots, however, show where in Iceland it is believed the highest seismic loads may occur. The earthquake building code in Iceland was implemented in 1976. In general, buildings in Iceland are very robust even though they have not been designed specifically with earthquakes in mind. There is a strong tradition of low-rise houses made of concrete or wood. Buildings are designed to withstand heavy snow- and wind load. No buildings in Iceland are structurally made from bricks. The poor resistance of such buildings against seismic load is a major problem in many countries but fortunately not in Iceland. The probability of collapse of buildings due to earthquakes in Iceland is low, even in those areas where the seismic load is the greatest.

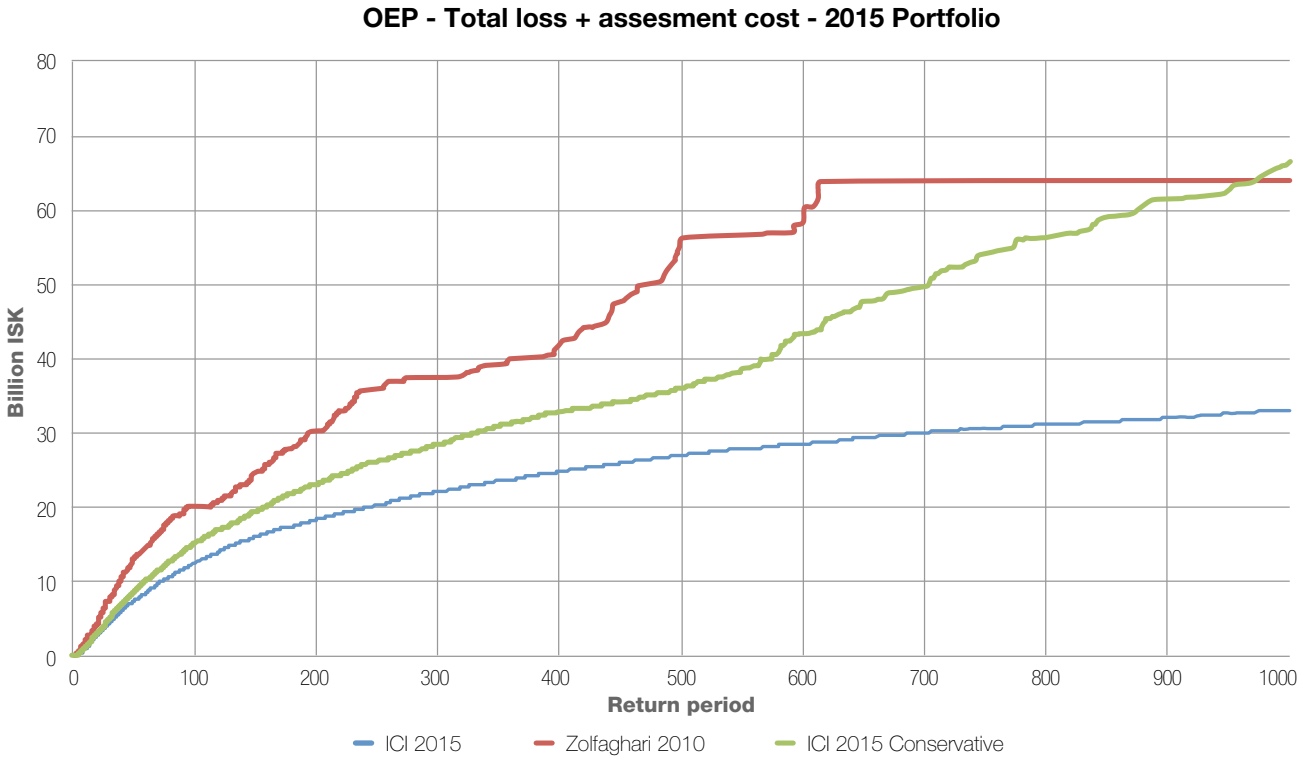


Horizontal Peak Ground Acceleration (%g)

0,01 - 0,05 0,06 - 0,15 0,16 - 0,35 0,36 - 0,50 0,51 - 0,90

Model Results (EP curve)

The figure shows results from the probabilistic risk model. It is based on three different event sets (synthetic catalogues). One event set is based on the previous hazard analysis by Cat Risk Solutions, introduced in 2011. The "ICI 2015" event set is based on the most recent hazard analysis, discussed on page 9 and 10. The "ICI 2015 Conservative" event set is based on the same event set but with more conservative estimation of maximum magnitude and frequency of earthquakes in the area south of Reykjavík.



Volcanic Hazard

In general the volcanic hazard can be categorized as follows:

1. Glacial floods generally affecting the rural farmlands on the south coast of Iceland. Out of the three glaciers Vatnajökull, Eyjafjallajökull and Katla, the latter could be the most threatening in this respect.
2. A downpour of tephra and fluorine poisoning of crops and livestock that is not insured by the Fund. Again the South Iceland farmlands could be the most affected.
3. Rural installations such as power stations, telecommunication lines and equipment, roads and bridges could be affected. The very fine tephra from Eyjafjallajökull 2010 and Grímsvötn 2011 was noticed in Reykjavík more as an annoyance rather than a calamity.
4. Major basaltic flood eruptions (similar to the Laki eruption in 1783, which had widespread effects all over Europe) would mainly be hazardous to power stations and communication lines. The Fund does not cover business interruption.
5. Lava flows from future effusive eruptions. This is especially true for the entire Reykjanes Peninsula with several small towns and the Keflavík International Airport at risk. Lava flows in Reykjavík and surrounding towns last occurred in Postglacial times.
6. Very large explosive eruptions (VEI≥6) in central volcanoes close to inhabited areas (for instance Öræfajökull 1362) might have a serious effect on farms and villages. However, no known active volcanoes are close to large urban centres in 2011.

Claims Management System

The ICI has recently implemented a new database, the Claims Database, designed to improve the claims process as a whole. When creating the database we had two primary objectives in mind.

The first objective concerns information. We wanted to make sure we would have a clear overview of all events during all phases of the process, both for us and for our claimants, who have limited access to own claims in the database. Reports can be easily retracted from the database and shared with reinsurers.

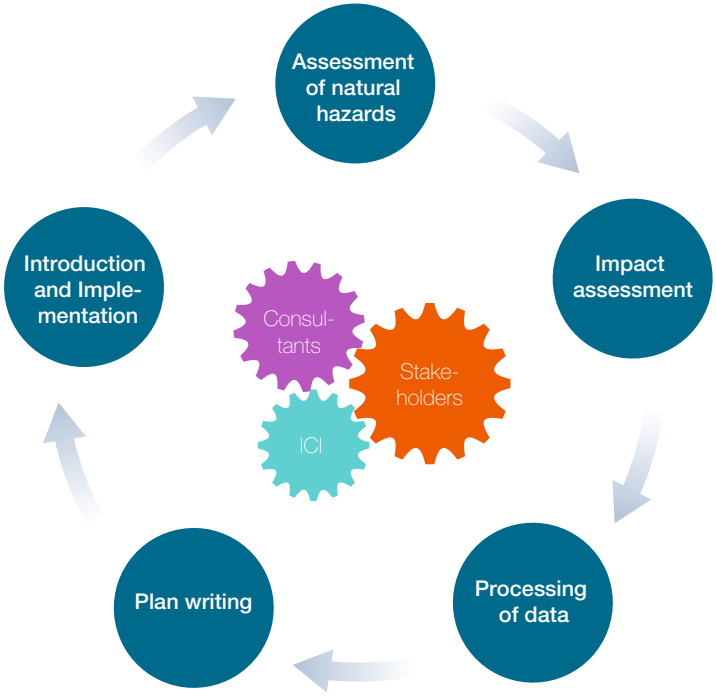
The second objective concerns accuracy and efficiency. We managed to improve significantly both the accuracy and effectiveness of the claims process with a few integrated components. The claimant logs into the database using a government issued electronic ID through our web page. When they file their claim, ownership of the property is confirmed through the Property Registry Database operated by Registers Iceland. Information about the property is then automatically retracted from the Property Registry Database into the Claims Database. The information about assessed value for fire insurance, building units and ownership of the property, among other details, ensure all interested parties are involved.

The Claims Database is tailored to the ICI's Quality Management system to make sure each claim transfers between employees and assessors in a proper way throughout the entire process. Time limits are imposed to each phase of the process. Claims due are visible at the top of the screen for the person responsible for each phase, thus ensuring each claim is concluded in a timely manner.

Cat Response Plan

A Cat Response Plan for the ICI was completed in May 2014. The plan is a milestone in the history of the ICI as it is the final piece of a major project that has been ongoing since 2011. This is a comprehensive plan that includes work processes, checklists and other resources that are useful when the forces of nature make themselves known. The Cat Response Plan contains instructions regarding reporting to stakeholders and various quality documents to ensure that responses are consistent and reliable.

In preparing the Cat Response Plan the importance of the active cooperation of both management and employees was emphasized. The implementation has had clear benefits and has proved successful in tests as well as in smaller-scale events where the decision to provide information and to activate the plan is taken as early as an event is anticipated.



Certified Quality Management System

The ICI has implemented a quality system that is in compliance with the ISO 9001 quality standard. Implementation of this quality system began in October 2011 with the Boards approval of a quality policy which aimed to implement the current quality system. In June 2013 the quality system was certified in compliance with the ISO 9001 quality standard by the British Standard Institution. The quality system increases the reliability of data, storage, traceability and consistency of procedures. It also improves business continuity of the ICI in a broad sense.

In 2013, the Board of Directors approved a Risk Management Policy, an Information Security Policy and a Code of Ethics. It is the assessment of the Board that with the issuance of these policy documents, policy making has become apparent concerning the most important aspects of the operations of the agency. To improve the quality system, audits are organised to assess compliance with the quality documents of the agency, with the active participation of all employees. Policy documents are reviewed on a regular basis by the revised requirements of the Icelandic Financial Supervisory Authority regarding insurance companies. Results of audits are presented to the Board on a regular basis in a yearly report.