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Foreword

Malcolm Sargeant *

The papers which follow were all presented at an international seminar sponsored by ADAPT, the Japan Institute for Labour Policy and Training and Tohoku University in November 2013. The seminar took place in Sendai in Japan and was titled *The Labour Market Impacts of Natural and Environmental Disasters*.

What has become known as the Great Japan Earthquake took place in March 2011 and it produced a massive tsunami which killed as more than 16,000 people and devastated the lives of many others. The tsunami also hit the Fukushima nuclear power station which led to the evacuation of the population from an area within a 20 kilometre radius of the plant. It of course also had a big impact upon employment in the region.

In the Emilia Romagna region of northern Italy earthquakes took place in May and June 2012. A lot less severe than the Japan earthquake but one that also had important consequences for the people living and working in the region, including the loss of life of workers who survived the initial earthquake but were obliged to return to work too soon.

In New Zealand, during the year 2010-2011, two earthquakes hit the South Island and there was a major disaster at the Pike River coal mine, also in the South Island. More than 185 people died in the second earthquake based on Christchurch and 29 workers were killed in the mine explosion.

These are all disasters which affected whole countries in general and had devastating impacts directly upon the communities most affected. These papers, presented by experts from Europe, Japan and New Zealand attempt to both quantify the effects on employment and to discuss the way forward. The seminar participants also had the opportunity to

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observe the tsunami affected region in Japan and this brought home to us all the impact on the region and the importance of learning from each other's experiences.

Overcoming Natural and Environmental Disasters: The Role of Industrial Relations and Some Reflections on the Italian Case

Michele Tiraboschi *

1. Framing the Issue

Natural disasters have had a major emotional impact on European public opinion, due to the deadly and psychological consequences they have on people and tremendous damage to buildings and facilities. Whereas environmental disasters are caused, either directly or indirectly, from human behaviour, natural ones are often unpredictable.

This partly explains why the public and the media only rarely move on from the dramatic “image” of such disasters, disregarding the serious effects on the economic and productive system, and hence on the labour market. This is also due to the difficulty to quantify these effects. The same holds for institutions and experts that prioritise the damage caused

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by such events, overlooking the direct effects on the economy and the functioning of the labour market.

Yet this is an issue that has been given increasing relevance lately. A recent study carried out by the European Environment Agency – EEA¹ – pointed out that European countries are experiencing a growing number of natural hazards and technological accidents caused by geophysical, technological, and socioeconomic changes. According to the report, the largest disasters due to natural hazards caused, overall, a loss of about €150 billion in the 32 EEA member countries between 1998 and 2009. These figures rise to €200 if smaller hazardous events are factored in. During the same period, 928 major events have been reported that caused 99,000 fatalities.

When the seriousness and the number of victims are considered, earthquakes rank second among the type of hazards. The victims were mostly workers on duty; considerable damage was caused to property assets and many working activities were temporarily suspended.

The European Environment Agency monitoring activity included the period between 1998 and 2009 and clearly indicated that the seriousness of the effects of natural disasters and hazards depends on the population vulnerability. If properly implemented, some special steps can reduce the impact of such occurrences on people safety and national economy. These measures should come along with adequate and reliable institutions that should be able to prevent these disasters and manage them once they occur.

Consequently, this paper sets out to assess the role of industrial relations in preventing and dealing with natural disasters, in terms of national safety and economic stability and of the safeguards provided to employers and the local community.

In this sense, the earthquake that has recently hit the Emilia Romagna region can provide some useful insights into the question. The violent quakes registered in May and June 2012 pointed out a crucial aspect, which was not taken into consideration at the time, concerning the prevention and management of natural disasters. Stuningly, fatalities mostly include workers who did not die during the earthquake but a few days later, when they were recalled to duty and started the rebuilding

¹ *Mapping the Impacts of Natural Hazards and Technological Accidents in Europe - An Overview of the Last Decade*, EEA Technical Report No 13/2010, Luxembourg, 2010 (see in <http://www.eea.europa.eu/publications/mapping-the-impacts-of-natural>).

process. Perhaps more effective dialogue between employers and trade unions would have avoided these deaths.

Likewise significant is the fact that many of the modern industrial plants based in one of the richest and most productive Italian areas collapsed due to quakes of moderate intensity.

It is past experience, more specifically the earthquake that took place in the Umbria region between 1997 and 1998, which highlights the major role held by the industrial relations system in warding off and dealing with natural disasters. On that occasion, the “Single Insurance Contribution Payment Certificate” (*Documento Unico di Regolarità Contributiva - DURC*) was issued to ensure that only employers who comply with anti-seismic regulations were involved in rebuilding. DURC was intended as a tool to select compliant employers to be engaged in reconstruction and indirectly safeguard workers and individuals operating in the areas hit by the disaster.

Originally an industrial relations practice, DURC was implemented through national legislation² and emerged as a major tool against irregular work, especially in those industries where contracting and subcontracting were widespread phenomena. Drawing on DURC, Italian legislation made provision to include within the Consolidated Act on Occupational Health and Safety of 2008 (*Testo unico di salute e sicurezza sul lavoro*³) a modern procedure to single out the market operators and, albeit indirectly, safeguard workers and people, more generally. The selection procedure consists of a system of qualification according to which only qualified employers with technical and professional expertise specified in the collective agreement are allowed to operate in certain markets. To this end, suitable employers need to meet some criteria concerning contractual requirements – especially in contracting out tasks and activities – related for instance to aspects of health and safety at work.

This system was intended for the most dangerous sectors and activities and now applies to confined spaces (e.g. tanks)⁴ although its implementation can be pondered in the event of other types of natural hazards (mine collapses, marine oil spills, industrial pollution and land contamination).

Based on these considerations, this paper investigates social dialogue and the industrial relations system considering their role during natural (earthquakes and floods), and environmental disasters.

² Law No. 266/2002 and Decree Law No. 276/2003.

³ Legislative Decree No. 81/2008.

⁴ Decree of the President of the Republic No. 177/2011.

2. The Prevention and Management of Natural Disasters: The Legal Framework

Over time, Italy has been affected by earthquakes, landslides, and floods which unavoidably impacted on the work organization and productive processes of the areas involved. This state of affairs prompted Italian lawmakers to enforce binding rules to ensure compliance with the measures to be taken in the event of such occurrences. A critical issue concerns the low levels of effectiveness of these provisions and limited monitoring on the part of public authorities.

The foregoing measures include guarantees that the facilities are safe and that individual health and safety is safeguarded, alongside reassurances that workers will maintain their jobs. When faced with these events, compliance with building codes should be given high priority. In the event of earthquakes, such compliance should be evaluated, particularly in the case of manufacturing plants. The same applies for public estate (hospitals, schools, universities, and so forth) where both users and workers must be protected.

With a view of restoring production activity and normal working and living conditions in a safe environment, a seismic certificate of compliance must be issued to the employer and then sent to the relevant municipality, after an expert has verified that the facility complies with the safety standards set out by law⁵.

The employer – who is supported by the “prevention and protection service manager” on organizational and technical issues – assists the expert and notes the results of the inspection in order to comply with possible shortcomings at a later stage. Pursuant to the Consolidated Act on Occupational Health and Safety of 2008⁶, managers, workers, and supervisors must be apprised of such activities, as it concerns their health and safety at work. As empowered with medical surveillance, the competent health authority must also be informed of the outcome of the inspection. Workers’ health and safety representatives must be involved in the inspection as well.

As far as workers’ health and safety is concerned, compliance with relevant legislation must be analyzed considering three major aspects:

⁵ For some technical insight, see Decree of the President of the Republic No. 380/2001, laying down the *Testo Unico delle Disposizioni Legislative e Regolamentari in Materia Edilizia*.

⁶ Art. 36 of Legislative Decree No. 81/2008.

managing an emergency situation, handling health and safety issues when returning to work, and preventing or mitigating the risks arising from such events on one's state of health in the medium and long term. On the last point, traditional rules might prove ineffective, so employers are called on to look for new solutions in terms of organisation and best practices.

As for risk and emergency management, Italian legislation places an obligation upon the employer – who should be supported by workers' health and safety officers and the competent health authorities – to raise knowledge and awareness of the risks and to promote safe behaviour.

Special requirements are demanded of employers and management to deal with any kind of emergency. Pursuant to the Consolidated Act on Occupational Health and Safety of 2008⁷ employers, and management more generally, are required to appoint workers in charge of risk management (evacuation in the event of immediate and serious danger, rescue, and first aid). Fines are issued for failing to fulfill with this obligation. They should also take steps in terms of risk monitoring and instruct workers to leave the dangerous area and the workplace in the event of serious, inevitable and immediate danger. The Consolidated Act on Occupational Health and Safety of 2008⁸ also sets forth that employers should appoint workers in charge of implementing measures to prevent and manage possible risks. These workers should be adequately trained and equipped based on the size of the productive unit and the relating risks. Most importantly, workers should be also instructed not to resume work if a situation of serious and immediate danger persists.

The 2008 Consolidated Act on Occupational Health and Safety⁹ clearly specifies the workers' rights in the event of serious and immediate danger. Workers leaving their workstation and/or a dangerous area in the event of serious, imminent and unavoidable danger may not be placed at any disadvantage because of their action and must be protected against any harmful and unjustified consequences. Further, where the immediate superior responsible cannot be contacted, workers should take the appropriate steps in light of their knowledge and the technical means at their disposal, to avoid the consequences of such danger.

As seen, management must issue and make available to all those concerned an emergency plan, which should contain the procedures and behavior in case such events occur. Employers should appoint those in charge of dealing with emergencies through appropriate measures, while

⁷ Art. 18 of Legislative Decree No. 81/2008.

⁸ Art. 43 of Legislative Decree No. 81/2008.

⁹ Art. 44 of Legislative Decree No. 81/2008.

workers have the right to leave the workstation and return to work only if the safety of the facility has been assessed by the fire brigade or Civil Defence (*Protezione Civile*).

Immediately after the occurrence, the employers' focus should be on guaranteeing the safety of those returning to work and on mitigating and preventing possible future risks. The first step concerns a new risk assessment¹⁰ or an update of the company risk assessment document¹¹. The latter is necessary to re-evaluate risks and safety in the workplace and the effectiveness of individual and collective protection devices in light of such new developments.

Consequently, the risk assessment allows employers to pinpoint, plan, and improve the necessary preventive measures as well as evaluating their effectiveness. Moreover, it is essential to review the company risk assessment document after an earthquake or a natural disaster in order to test the safety measures already in place or amend them whereas inadequate.

A thorough risk assessment is possible only through the active participation of all those concerned, particularly the staff, in order to gain an awareness of work-related issues. For this reason, straight after the event, the promotion of training and information activities should involve all workers, not only those appointed to deal with emergency situations¹².

¹⁰ Art. 28 of Legislative Decree No. 81/2008.

¹¹ Pursuant to Art. 29 of Legislative Decree No. 81/2008, paragraph 3, "*The risk assessment must be revised immediately in accordance with the procedures referred to in paragraphs 1 and 2, in the event of changes to the production process or the organization of work relevant for the health and safety of workers, or in relation to technical evolution, prevention or protection measures or as a result of significant injuries or when the results of health surveillance deem it necessary. As a result of this restructuring, the prevention measures must be updated. In the cases referred to above, the risk assessment document should be revised in accordance with the procedures referred to in paragraphs 1 and 2, within thirty days*".

¹² In order to support the employers in these delicate phases, the European Agency for Safety and Health at Work has developed a series of good management practices and suggestions for coping with disasters at the EU level. In detail, the agency recommends employers develop effective modes of communication and exchange of information among workers based on coordination. In addition, it emphasizes the opportunity to organize a safety management cycle based on the examination of the risks the company can face in the event of disasters, on the analysis of appropriate action to address them and their implementation at the workplace. Within the European Agency for Safety and Health at Work, the National Research Institute of Fire and Disaster (NRIFD) was set up to deal with research on issues related to events such as fires, earthquakes or natural disasters in general, thus providing further tools to improve the management of these tragic events.

However, the natural hazards that have hit Italy of late have pointed out the limitations of the many regulations in force. This is true if one considers their presumed effectiveness at a theoretical level, which clashes with major shortcomings in practical terms and certain difficulty to deal with a wider and more dynamic notion of “risk”. Safeguards are still overly concerned with safety and prevention within the productive system, thus failing to consider external factors (e.g. earthquakes) which can be certainly prevented in some areas. Internal and external factors – that is those under the employer’s control and those originating by force majeure events – are still treated as two distinct elements in terms of employer’s requirements and liability.

3. The Welfare System: Initiatives to Help Resume Production

3.1. Financial Aid to Employers: Taxes and Contributions

In order to deal with the consequences of natural and environmental disasters on the labour market and promote the resumption of production activity, the Italian welfare system provides a range of both structural and extraordinary measures.

For instance, soon after the earthquakes that hit the Abruzzi and the Emilia-Romagna regions, a decree law was passed which acknowledged the state of emergency in those areas and relieved businesses of some legal obligations¹³.

Among other things, the numerous decree laws enforced following natural hazards set forth the exceptional and temporary suspension of fiscal obligations (which include levies, taxes and contributions to be paid to the State or local authorities) and contributions for social security purposes. Thanks to this suspension, those market actors who cannot operate due to unforeseeable circumstances are relieved of an additional tax burden.

Aside from these emergency measures, further provisions are implemented at a national and local level, which are intended to help restart production by means of economic incentives and other forms of financial support, either directly or indirectly (e.g. tax credits and breaks in case of delocalization).

¹³ In this respect, for the emergency cases cited, suspension was provided Decree-Law of 6 June 2012, No. 74 issued after the earthquake that occurred in Emilia Romagna and the Decree-Law of 28 April 2009, No. 39 for the earthquake in the Abruzzi.

At regional level, financial resources have been made available by the European Social Fund through Operative Programmes (OP) that aim at re-launching economic activity by favouring the recruitment of new staff. In this case, economic incentives are provided when a new worker is hired.

Further initiatives concern the involvement of local universities by way of financial support to research, and the development of businesses located in the areas affected by the seismic event. The aim here is not simply to favour the resumption of the facilities that have been damaged, but to promote a thorough review of the area from a modern perspective, also taking account of future developments.

Local authorities at the Emilia-Romagna Region made a pledge to support industrial research of the businesses based in the areas stricken by the earthquake, in order to boost their competitive re-launch. Among the many initiatives are: the technological advancement of productive processes and businesses' organizational systems, the diversification of production also through the recourse of innovative technology, the sustainable development of firms which takes account of energy resources to be used in an efficient and rational way, while considering the safety of the work environment and territory, as well as consumers' health.

3.2. Workers' Income Support

Pursuant to Italian legislation, the scope to provide income support measures for workers (e.g. ordinary or extraordinary wage guarantee funds) is possible in the event of suspension of production. The duration and amount of the funds are dependent upon the productive sector, the size of the company and the reasons for suspension. These forms of income support are fundamental in case natural disasters occur. Indeed, problems related to the suspension of production add to the impossibility to speed up workers' reinsertion into the productive process. This is because of the uniform impact of natural disasters, which does not allow for making a quick and reliable evaluation of the time to recover and to resume production. Further, all workers are involved, not only those in salaried employment. It is as though the labour market they know disappeared all of a sudden.

In November 2012, following the earthquake that struck the Emilia-Romagna region in May of the same year, over 40,000 workers – for a total of 4,000 productive sites – in the manufacturing and trading sector faced suspension of production and had to apply for safety net measures.

More generally, the statistics supplied by the Emilia-Romagna region estimated that 4,800 jobs were lost in salaried employment in the private sector¹⁴ because of the seismic event. Before that, Italy had to cope with another emergency, to wit the quakes that shook the Abruzzi region on 6 April 2009.

In both circumstances, the Government's immediate response was to collect extraordinary financial resources to support the income of the workers involved and instruct local authorities in the allocation of this funding, to be used as safety-net measures. The expression "safety-net measures" refers to different forms of income support, among which are unemployment benefits (ordinary and extraordinary funds in the construction industry and agriculture), wage guarantee funds (both ordinary and extraordinary), special unemployment schemes and alternative forms of support afforded by autonomous productive sectors and joint bodies.

The measures put in place to overcome the consequences of the earthquakes mainly concerned those provided in case of suspension of production. Among others are unemployment benefits granted to workers in salaried employment who remained unemployed and met certain contribution requirements; ordinary wage guarantee funds, which are allocated in the event of temporary events which are not attributable to the employer or the worker; extraordinary wage guarantee funds, which are granted in cases of company crisis regarded as relevant at sectoral and local level; and an unemployment scheme which financially supports workers made redundant as a result of collective dismissals (*indennità di mobilità*).

Alternatively, Italian legislation also gives the opportunity to access funding to employers who do not meet the foregoing statutory requirements, provided that these funds are paid on a regular basis.

The system put in place to support the workers affected by natural disasters is characterized by some very specific stages. First, certain income support measures available to workers in salaried employment are extended also to those who are not usually entitled to these benefits (the self-employed and those in quasi-subordinate employment),¹⁵ by paying

¹⁴ Data provided by the Emilia Romagna Region in 2013 report "*Un Anno Dopo*".

¹⁵ This result was achieved, in the Abruzzi, through a decree-law adopted by the Council of Ministers No. 46 of 23/04/2009, which initially granted an extension of unemployment benefits and of the allowance for self-employed and quasi-subordinate employees forced to suspend their activities. This provision was partially laid down also in the Agreement of 17/04/2009 between the Ministry of Labour and the Abruzzi

them an allowance on a one-off basis, which are special forms of wage guarantee funds called *cassa integrazione in deroga*.

Subsequently – and as soon as possible during the state of emergency – the areas benefitting from extraordinary interventions and income support measures will be singled out. Finally, the government will plan the resources available, the funding to be allocated, and the necessary procedures to be implemented by local actors to apply for the funds, extending financial aid to those workers who are usually excluded from this entitlement (e.g. apprentices and agency workers).

Evidently, local institutions and trade unions play an important role, for they are in charge of the planning and the allocation of resources in the shortest possible time, and of implementing stages and bureaucratic procedures for which timing is essential.

A suitable example is to be found in the minutes of the meeting held on 27 April 2009 by the “Emergency Committee in Businesses and Sectoral Crises” (*Comitato di intervento per le crisi aziendali e di settore, C.I.C.A.S.*), which specified that workers themselves can apply for *cassa integrazione in deroga* if employers show unwillingness to do so.

Region and was confirmed in the Framework Agreement between the Region and the Trade Unions of 27/04/2009. This also establishes exceptional income support for temporary layoffs, extension of mobility schemes and recourse to short time work schemes for enterprises with up to 15 employees for 13 weeks. These schemes were re-financed (also in those cases where the recourse to such schemes was not expressly linked to the earthquake) through Ministerial Decree No. 64127 of February 1, 2012.

As for the Emilia-Romagna region and other areas affected by the earthquake of May 20 and 29, 2012, paragraph 2 of art No. 15 of the Decree Law No. 74 of 6 June 2012 provides for an allowance for workers under coordinated and continuous work arrangements, for commercial agents, self-employed, including business people and professionals registered to any form of compulsory pension and social security scheme who had to suspend their activities because of the earthquake, to be financed through the European Social Fund. Already on 25 May 2012 in the Region of Emilia Romagna “a table for a Pact on Smart, Sustainable and Inclusive growth” was convened, which set out as the possibility to benefit from an exceptional income support for temporary layoffs in case of a “transient event not attributable to the entrepreneur and due to the earthquake” as well as of “company crisis resulting from a sudden and unexpected event and due to the earthquake”. In addition, a list of the companies that cannot access ordinary income support schemes for temporary layoffs was drawn up, and it was established that they could benefit of a special form of income support. The list included companies that are member of bilateral bodies, and for these, this special scheme replaced the usual income support scheme, where benefits in case of temporary layoffs are partly paid by bilateral bodies. To all this, it followed a rapid adoption of various collective agreements.

In practical terms, it is worth noting that the allocation of resources through safety-net measures to salaried employees went smoothly, as the system is well-established. The same cannot be said of the €20 million¹⁶ destined to the self-employed and workers in quasi-subordinate employment involved in the earthquake in the Emilia-Romagna Region, which are yet to be assigned. This is because their allocation is dependent on the enactment of a provision of the Ministry of Labour and Social Policies and the Ministry of Economic Affairs and Finance, which was never implemented¹⁷.

4. Conversion of Production and Workers' Retraining

Aside from causing fatalities, natural and environmental disasters have serious economic consequences, either in terms of direct costs (e.g. rebuilding) and indirect costs (e.g. a lower contribution to economy and the production of goods and services, the suspension of activity following the seismic event, and loss of production during reconstruction).

The strategies to mitigate the effects of natural disasters might give rise to a process of production reconversion towards new markets (e.g. green economy) – which might contribute to creating new productive processes and retraining workers. In this sense, the notion of “ecological conversion” is making inroads as a process to help overcome environmental issues in Italy and elsewhere, namely climatic changes, drought, water shortage and resource depletion, and natural disasters. Arguably, it will also boost employment, favouring the hiring of new personnel and promoting the wealth of skills of technical staff.

Post-disaster reconstruction can favour this process, most notably through the building of renewable energy plants (wind energy, solar energy, geothermic energy, biomass energy, water energy and so forth), the provision of mechanical and electronic tools to promote efficiency in the use of energy, the recourse to sustainable and shared methods of

¹⁶ Art. 15, paragraph 2, of Decree Law 6 June 2012 No. 74, modified by law of 1 August 2012, No. 122.

¹⁷ While waiting for activities of the Ministry of Labour and Social Policy, a working group comprising Region, Province, ABI (Italian Banking Association) and bank delegates at the local level, in order to evaluate the possibility to anticipate the allowance in a one-off payment while waiting for the release of the funds. On the issue of fund granting, it was submitted to the Senate in May 2013, a proposal to commit the Government to release the funds, and if necessary to increase them.

transport and systems of resource recovery (waste recycling). Further benefits include developing know-how to protect and regenerate the territory, environmental friendly farming for which high-qualified workers are needed, as well as restoring decommissioned facilities and providing technical and maintenance skills to make use of goods to the full, also by means of workshops. Through recycling, the lifecycle of numerous goods and items can be rescheduled in order to recoup efficiency in terms of resources and energy. A shortening of their productive cycle (in terms of raw materials, transformation, manufacturing, and the use of final product) could decrease energy waste and minimize the impact on environment. It is not coincidence that a rise in the number of green jobs has been reported, that is “those occupations that contribute to a large extent to preserving or restoring the quality of environment in agriculture, industry, services or administration”¹⁸. The green economy can affect different sectors and aspects in our lives (transport, renewables, communications, finance, waste management, agriculture, the building sector), with important implications on the labour market.

Identifying new job profiles and reviewing existing ones considering an ecologic perspective call for different and more defined skills that are closely related to the organisation and different stages of production.

Once these new professions are defined, a qualitative evaluation is necessary concerning aspects such as work organisation, remuneration, and professional growth considering emerging factors like health and safety issues.

In order to generate new green jobs and making existing ones more sustainable in different sectors, it is pivotal to fill the skills gap concerning the green economy, which today acts as a hindrance to technology progress, hampering the establishment of sustainable behaviour and carbon low emission strategies.

Arguably, inadequate competence and little attention paid to the foregoing issues on the part of the industrial relations actors can be seen as the underlying causes prompting a vicious cycle of low productivity and incomes that exclude workers from active participation in economic and social growth.

¹⁸ United Nations Environment Programme - UNEP, 2010.

5. The Role of the Industrial Relations System and DURC: An Instance of Good Practice

Italian legislation has set forth an up-to-date set of rules to prevent and manage natural and environmental disasters, partly due to the requirements imposed by its membership to the EU.

In the same vein, the welfare system supports employers and workers either under normal or extraordinary circumstances, for example by guaranteeing remuneration to the latter in case of suspension of production.

Yet the Italian experience shows that in those areas where institutions are lacking, laws are poorly implemented – if violated at all – and economic incentives and income support are inadequate and not used as a means to overhaul the areas and sectors affected by the disaster.

An egregious example is the way some areas of Southern Italy marked by a weak system of industrial relations and poor social dialogue between community actors dealt with the earthquake, particularly when compared with the positive approach taken in other regions (Emilia-Romagna and Umbria), where effective social dialogue among institutions allowed for production and other activities to quickly resume.

Further compounding the Italian picture is the absence of a sound system to monitor the trend of the labour market and the inefficiency of the public employment services, which do not permit evaluating the impact of natural disasters on the functioning of the market. This is an important aspect to consider, not so much in terms of job losses, as in terms of a mismatch between labour demand and supply and the adequacy of the emergency measures put in place concerning employment-related issues.

Although with some intrinsic differences in terms of scope and effectiveness, the institutional and legal framework seems to be apt to cope with the direct and immediate consequences of natural and environmental disasters. What is missing is forward planning on the restoration of facilities and resumption of activities and production sectors. When this happened, it was thanks to a sound system of industrial relations that is effective dialogue among institutions, employers and trade unions, which transformed the disaster into an opportunity for growth, thus moving on from the emergency state.

5.1. Implementing DURC following the Earthquake in Umbria: From an Emergency Measures to Established Regulations

Reconstruction and reclamation after natural or environmental disasters are very complex processes calling for modern laws as well as active cooperation between public institutions and other stakeholders, such as employers, workers and citizens, more generally. Particularly important in this respect is a well-functioning industrial relations system, which in some cases proved to be more effective than the legislation in supplying quick and appropriate solutions to emergencies.

A case in point is the “Single Insurance Contribution Payment Certificate” (*Documento Unico di Regolarità Contributiva* - DURC), which certifies the regular payment of social security contributions on the part of the employer. Introduced subsequent to the earthquake in Umbria in 1997, DURC was first adopted by social partners and then included in national legislation to ensure workers’ protection of health and safety, as well as the regular payment of social security contributions, concurrently preventing non-compliant employers in the construction sector from winning procurements for construction or reconstruction works. It represented a major breakthrough in administrative procurement control procedures, making sure that the regular payment of contributions on the part of employers and becoming increasingly important in the Italian legal system.

In particular, by means of a regional provision¹⁹, the Umbria region introduced DURC as a mandatory document to certify the regular payment of contributions on the part of the contractor for workers employed in the reconstruction activities. Subsequently, a memorandum of understanding regarding the certification of regular payment of social security and insurance contributions was agreed between the Umbria region, social security institutions (INPS and INAIL) and the Construction Industry Fund (*cassa edile*), while a one-stop shop for the issuance of DURC was set up for the purpose²⁰.

The DURC was initially designed to simplify certification procedures regarding the regular payment of contributions to INPS and INAIL and then to the Construction Industry Fund, but the scope of relevant legislation was gradually expanded, making it an essential tool for singling

¹⁹ Regional Law No. 30/1998.

²⁰ Resolution of the Regional Council No. 560/1999.

out the employers who are entitled to be involved in the reconstruction process²¹.

Since 2002, DURC has become a necessary precondition to take part in public procurements and it should be submitted to the procurement authority under penalty of revocation of the procurement contract. In 2003, it was required only in the case of private contracts in the building sector, and the law, provided that the procurement authority or the entity in charge of the construction works should require a certification stating the regular payment of contributions, issued by INPS, INAIL and by the Construction Industry Fund. Further, and for the purpose of DURC, these three entities concluded a special agreement²².

Subsequent reforms provided that to access EU subsidies, employers from all sectors were required to submit DURC²³ and that they could apply only for EU subsidies made available for investments²⁴. The following year²⁵ it was decided that regulatory and economic incentives statutorily provided for employment-related and social matters, could be granted only if DURC was regularly submitted, and in compliance with “other legal obligations” and “collective agreements at the national as well as regional, local or company level where existing, concluded by comparatively most representative trade unions and employers’ associations at the national level”.

Finally, the Consolidated Act on Occupational Health and Safety of 2008²⁶ provided for the obligation to produce DURC both in the case of public works contracts, public supply contracts, public service contracts, as well as in the case of private contracts for construction works, that is, in all those cases of “temporary or mobile construction sites” where “building or civil engineering works are conducted”.

In the Consolidated Act – but also in other provisions of law – DURC seems to play a role that goes well beyond that of merely certifying the

²¹ On the evolution of the legislation on DURC see D. Papa, P. Pennesi, *Il Contrasto al Lavoro Nero e Irregolare e il DURC*, in M. Tiraboschi, L. Fantini (eds.), *Il Testo Unico di Salute e Sicurezza sul Lavoro dopo il Correttivo (d.lgs. n. 106/2009)*, Giuffrè, Milan, 2009, 525-534.

²² In particular as a result of Article 86, Section 10 of the Legislative Decree No. 276 of 2003, which amended the legislative decree No. 494 of 1996.

²³ With Article 10, paragraph 7, of Law Decree No. 203 of 2005 (ratified by Law No. 248 of 2005) laying down measures to combat tax evasion and urgent provisions in taxation and financial matters.

²⁴ Art. 1, paragraph 553, of Law No. 266 of 2005 (Budget 2006).

²⁵ Art. 1, paragraph 1175, of Law No. 296 of 2006 (Budget 2007).

²⁶ Legislative Decree No. 81/2008, and as already provided by Legislative Decree 163 of 2006.

regular payment of contributions. It is an essential tool to assess the “technical and professional suitability of service providers, contractors and self-employed workers in relation to the functions or to the works to be carried out²⁷”.

From the above it is clear that DURC is crucial at the time of singling out the employers entitled to operate in the market, since only those that have been issued with DURC can legitimately operate in the construction sector where irregular and illegal work are notoriously more widespread phenomena than elsewhere.

Drawing on that, a structured and modern procedure for selecting market operators (thus indirectly providing increased protection to workers and citizens) known as “employer’s qualification system” was included in the Consolidated Act on Occupational Health and Safety of 2008. This system gives access to certain markets only to qualified employers, ensuring possession of the required technical and professional skills, and compliance with the relevant collective agreement, also by conforming to certain contractual general and specific standards in public procurements and private contracts, particularly those concerning health and safety procedures. This system, introduced by law in those sectors considered at high risk, is now operational in the case of working activities in confined spaces and plays a role in all types of natural and environmental disasters (collapses of mines, oil spills due to releases of crude oil from tankers, pollution and environmental contamination from industrial activities).

5.2. The Role of Bilateral Bodies

In Italy, bilateral bodies have increasingly played an important role in cases of environmental and natural disasters. The Italian law²⁸ defines them as “bodies set up at the initiative of one or more of comparatively most representative associations of employers and workers, as a privileged tool for the regulation of the labor market, promoting legal and high-quality employment, a better match between labour demand and supply, the planning of training activities and implementation of in-company vocational training, good practices against discrimination and the inclusion of disadvantaged workers, while encouraging the shared management of training and income-support funds, the certification of employment contracts as well as compliance with tax and social security

²⁷ Art. 90 of Legislative Decree No. 81 of 2008.

²⁸ Art. 2, paragraph 1, letter h), of Legislative Decree No. 276/2003.

contributions. Finally, they promote best practices in the field of health and safety at work, performing additional functions as provided by law or as assigned by the relevant collective agreement”.

Not only do they provide services and benefits for workers and employers, but they also serve as a catalyst for encouraging social partners to efficiently deal with and prevent the consequences of disasters. New functions have been attributed to bilateral bodies over the years, too.

With regard to their operational functions and with specific reference to the protection of health and safety in the workplace, these functions are defined by law and aim at providing technical support to employers.

In particular, the Consolidated Act on Occupational Health and Safety of 2008²⁹ defines joint bodies (referring to bilateral bodies) as “bodies set up at the initiative of one or more of the comparatively most representative associations of employers and workers’ organisations at the national level, as privileged tools for the planning of training activities and the introduction of good practices for prevention purposes, the development of actions related to health and safety at work; assistance to companies in complying with the relevant obligations; any other activity or function assigned to them by law or by the relevant collective agreement regulating their functions³⁰”.

Among these functions, particularly relevant are those related to training, counseling in dispute resolution, technical and organizational support for employers. They thus play a crucial role in the aftermath of crisis events (dispute settlement and technical and organizational support to companies) as well as in the medium to long term, putting in place measures to prevent natural and environmental disasters (training and, again, technical and organizational aid).

Among the broad category of bilateral bodies, *joint bodies* are the ones specialized on health and safety. The feature of being *joint*, which is typical of bilateral bodies in general and implies that the body is jointly managed as agreed through collective bargaining, is explicit by their very name. The setting up of joint bodies and their functions are established through collective agreements, without prejudice to bilateral entities already existing and set up in inter-confederation, sectoral, national, local or company-level agreements. Generally, these bodies operate at the national, regional and provincial level, but not at the company level, unlike in other European countries. Their presence at the local level is, in turn,

²⁹ Art. 2, paragraph 1 letter ee), of Legislative Decree No. 81/2008.

³⁰ See in this regard Art. 30 e 51 of Legislative Decree No. 81/2008.

particularly favorable for the acquisition of new functions, enhancing dialogue between social partners, and between social partners and institutions³¹.

Mention should also be made of the powers of bilateral bodies relating to labour market protection in areas affected by disasters. In the case of a suspension of the working activities due to sudden and unexpected events, bilateral bodies manage sectoral funds that can be used as income support for employees facing temporary crises caused by force majeure events beyond the employer's control. These funds, among other things, can help firms resume production, and encourage processes such as the reorganization and relocation/redevelopment of the activities.

The labour market reform of 2012³² further enhanced the role of bilateralism, primarily by granting access to specific unemployment benefits (Aspi), partly paid (at least 20%) by bilateral funds on the part of workers suspended from work for business or employment crises meeting specific requirements in terms of insurance and social security contributions for the years 2013 to 2015.

Further,³³ special bilateral funds (*fondi bilaterali di solidarietà*) have been set up to deal with crisis situations in those sectors where wage guarantee funds do not apply (*cassa integrazione guadagni*). In these cases, allowances are paid by these funds, if the crisis is due to one of the reasons envisaged by law that grant access to ordinary and extraordinary wage guarantee funds (*cassa integrazione guadagni ordinaria e straordinaria*).

In addition to this operational role, bilateral bodies play a promotional role encouraging the conclusion of agreements between social partners with a view to taking steps to support employers affected by events of considerable magnitude.

Many examples could be given in this respect. Among the most recent ones, particularly relevant was the agreement reached by national bilateral bodies linked to Confesercenti and Unicredit, establishing that employers and workers in the areas affected by the earthquake of May 2012 in Emilia Romagna can access credit at very advantageous conditions, especially in the case of a first request of financial support for the resumption of their activities. More in details, the agreement provides that employers can be granted a 12-month interest free loan with no additional fees, payable

³¹ For an overview of the role of Joint Bodies in the field of health and safety see M. Lai, "Gli Organismi Paritetici", in M. Tiraboschi, L. Fantini, *Il Testo Unico di Salute e Sicurezza sul Lavoro Dopo il Correttivo (d.lgs. n. 106/2009)*, Giuffrè, Milan, 2009, 493-501.

³² Art. 3, paragraph 17, of Law No. 92/2012.

³³ Art. 3, paragraph 4, of Law No. 92/2012.

outright at maturity, thanks to the direct involvement of bilateral bodies connected to Confesercenti that bear these costs³⁴.

It is therefore clear that the development of bilateralism can only be seen positively, as an out-of-company channel of communication favouring consultation and participation procedures at the workplace – ensuring immediate response to crisis situations, as well as enabling medium to long run solutions to events that may affect workplace safety as well as labour market stability in the afflicted areas.

5.3. Evolutionary Perspectives: The Employers' Qualification System

5.3.1. Rules Governing the Qualification of Employers

The need to effectively manage and prevent the negative effects of emergency situations on the workplace and workers' health and safety led Italian lawmakers to ultimately introducing in the existing system of formal safeguards – essentially based on compliance with bureaucratic requirements and on the development of a complex sanctioning system – a series of tools that made it possible for the “upward” selection of employers and economic operators entitled to operate in the market, based on their organizational and managerial standards, both in terms of production and employment arrangements. This is particularly relevant in those sectors characterized by high levels of risks and work-related accidents, which operate in markets particularly exposed to social

³⁴ Mention should be made of the bilateral body of the Region Lazio for the Artisan sector that, in the event of extreme weather conditions or natural disasters that cause an interruption of the production cycle it ensures a wage subsidy in the amount of 40% of the net hourly pay for the first 4 weeks of suspension, up to 160 hours per year.

Also bilateral bodies of Varese provide a one-off contribution for companies that have incurred expenses as a result of the damages caused by exceptional events arising from “natural causes” that led to a partial or total suspension of production activity of the company in the six months after the event, for a first resumption of the production cycle, as well as to make up for the damages caused to property, plants, equipment, materials and products. The subsidy is granted to the extent of 15% of the full amount and cannot exceed a maximum of € 1,000.00. The bilateral body of the Artisan Sector of Tuscany has allocated a budget of 1 million 200 thousand Euros to support an emergency intervention in favour of businesses and self-employed artisans affected by the recent floods that have plagued many areas in the provinces of Grosseto, Massa Carrara, Lucca and Siena. In addition, at the initiative of trade unions CGIL, CISL and UIL other 300,000 Euros were allocated for interventions in favor of employees of small-sized businesses affected by flooding.

dumping, or that provide services in fields of particular importance, where also the health and safety of end users must be protected (catering services, sterilization services for hotels and hospitals, and so on)³⁵.

The purpose is, on the one hand, to encourage and reward those employers and self-employed workers adopting high standards, and, on the other hand, to induce competitors and other players to adapt to these standards in order not to be excluded from the market or from public or private contracts.

This is the rationale behind the idea of a qualification system for employers and self-employed workers, a regulatory tool which at first addressed only public works contracts³⁶, and that it was then enhanced and remodeled to ensure health and safety in the workplace as provided in the Consolidated Act of 2008, especially in the light of the amendments made in 2009³⁷.

Actually, the criteria established in the enabling provision issued by Parliament for the drafting of the Consolidated Law provisions referred to the introduction of “a qualification system for employers and self-employed workers” focusing on the technical expertise or the skills and knowledge in the field of health and safety at work “acquired through targeted training programs”³⁸.

A complex rule³⁹ was introduced which expressly provided that, within the Standing Advisory Commission on health and safety at work (a tripartite advisory body established by the Ministry⁴⁰) and following the

³⁵ For an overview of the evolution of the qualification system for companies and self-employed workers, see M. Tiraboschi, “Il Sistema di Qualificazione delle Imprese e dei Lavoratori Autonomi”, in M. Tiraboschi, L. Fantini (a cura di), *Il Testo Unico di Salute e Sicurezza sul Lavoro dopo il Correttivo (d.lgs. n. 106/2009)*, Giuffrè, Milan, 2009, 119-128.

³⁶ With certification, supervision and verification procedures introduced by Law No. 109 of 1994 and Legislative Decree No. 163 of 2006, as amended and supplemented by Legislative Decree No. 152 of 2008 laying down the Code of public works contracts, public supply contracts, public service contracts, implementing Directives No. 2004/17/EC and No. 2004/18/EC.

³⁷ Legislative Decree No. 106/2009, amending Legislative Decree No. 81/2008.

³⁸ Art. 1, paragraph 2, letter m), of Law No. 123/2007.

³⁹ Art. 27, of Legislative Decree No. 81/2008.

⁴⁰ The role and powers of the Commission are laid down in Article 6 of Legislative Decree No. 81/2008. Reference to the activities of the Commission regarding the qualification of businesses, was deleted recently with Article 32, paragraph 1, lett. a-bis of Decree-Law No. 69/2013 to accelerate and simplify the regulatory process of qualification.

advice of joint bodies⁴¹, the sectors should be identified, including the sector of textile and surgical instruments sanitation, to which the qualification system applies, as well as a series of criteria for the development of a system of qualification of employers and self-employed workers that ensures protection of health and safety at work. Certification is granted depending on the expertise and knowledge acquired through targeted training, upon compliance with certain contractual and organizational standards in the case of contracts for works and services and flexible working arrangements and on whether employment contracts have been certified⁴².

In relation to participation in public procurement⁴³, being awarded qualifications ensuring compliance with the relevant requirements constitutes a preferential criterion for the participation in tenders for public contracts and subcontracts as well as to have access to public subsidies, loans and contributions related to the same contracts or subcontracts.

The same criteria⁴⁴ provided the basis for a review of the requirements of technical and professional suitability of contractors and self-employed workers. This assessment used to be carried out by the commissioning body in the case of public procurements or private contract works and, up to that moment, consisted in a mere evaluation of a series of documents. This regulation is even more significant when considering that the Legislator has indicated⁴⁵ only by way of example a number of “pilot” sectors for the introduction of this selection mechanism, including for instance the sector of textile and surgical instruments sanitation and the construction sector. More specifically, with respect to the building sector, the Legislator – also by developing a points-based system for the qualification of market operators – expressly provides that qualification takes place through a tool which enables continuous monitoring of the suitability of employers and self-employed workers, of compliance with provisions and with all other requirements, including training in health and safety as well as those imposed by surveillance authorities. Employers and self-employed workers are allocated an initial score according to their degree of suitability that is reduced in the case of proven violations of

⁴¹ Reference to joint bodies was repealed through Art. 32, paragraph 1, lett. a-bis, of decree law No. 69/2013, converted into Law No. 98/2013.

⁴² According to Title VIII, paragraph I, of legislative decree 10 September 2003, No. 276

⁴³ Art. 27, paragraph 2, of Legislative Decree No. 81/2008.

⁴⁴ According to Art. 26, paragraph 1, of Legislative Decree No. 81/2008.

⁴⁵ Art. 27, paragraph 1 e 1-bis of Legislative Decree No. 81/2008.

health and safety regulations. When zero is reached due to repeated violations, employers or self-employed workers may be prevented from continuing to carry out their activities in the construction industry. The Legislator has provided that the mechanisms devised for the construction industry may be extended to other business sectors identified through one or more inter-confederation agreements concluded at the national level by most representative trade unions and employers' associations.

5.3.2. Sectors and Qualification Criteria

In addition to the sectors identified by law, the foregoing Standing Advisory Commission for health and safety at work extended to other sectors the recourse to the qualification system, paving the way towards the adoption of a specific Decree of the President of the Italian Republic containing the relevant regulations broken down by, not yet adopted so far.

Eight additional sectors have been identified for the introduction of a qualification system that could be extended to other sectors, such as catering and call centers, with specific reference to project-based workers, occasional workers and those self-employed having a single-client relationship, the transport sector, confined spaces; agency work, private security services, public health services, music, movie and theater performances; and trade fairs.

In addition, a series of mandatory requirements and preferential criteria applicable to all sectors for the recognition of the qualification have been identified. Mandatory requirements include:

- a) compliance with legal provisions relating to information, education and training of workers and, in particular, training and information as required by law⁴⁶;
- b) with reference to family-run businesses and self-employed workers, proven compliance with the law⁴⁷;
- c) compliance with the legislative provisions on DURC;
- d) the presence of at least 30% of the workforce with at least three years of expertise in the field, regardless of the type of the employment contract concluded. Business owners and/or employers directly involved in the work/production must be included in the foregoing 30% calculation;

⁴⁶ According to Art. 34, 36 e 37 of Legislative Decree No. 81/2008, and with reference to family-run businesses and self-employed workers, the activities listed in art. 21, paragraph 2, of Legislative Decree No. 81/2008.

⁴⁷ Of what is provided in Art. No. 21, paragraph 2, of Legislative Decree No. 81/2008.

- e) the suitability to perform the relevant activities. Assessment is carried out taking into account compliance with the provisions on risk assessment, health surveillance, emergency management measures, supply, possession, proper use and maintenance of personal protective equipment and work equipment;
- f) no sanctions on health and safety at work in the two years preceding the contract or the granting of public incentives, loans and contributions or full payment of the sanction (maximum one) imposed in the same period;
- g) the full application of collective agreements, including the payment of contributions to the relevant bilateral fund, concluded with comparatively most representative workers' organizations at the national level or with their local branches according to the law and to inter-confederation agreements in force.

Preferential criteria include:

- a) the certification of individual contracts of employment, including flexible employment contracts and individual contracts for works and services or subcontracts in accordance with the provisions of the law⁴⁸;
- b) the adoption and effective implementation on the part of businesses of organizational models and management complying with the law⁴⁹;
- c) any other element expressly provided for to this purpose in inter-confederation agreements or collective agreements concluded with comparatively most representative workers' organizations at the national level;
- d) the application of codes of conduct codes of ethics, as well as social responsibility initiatives.

Mandatory requirements and preferential criteria will operate in accordance with the relevant provisions and following sector-specific criteria.

Particularly relevant is the case of confined spaces, marked with high rates of fatal accidents over time. The sector has long had a well-structured regulatory framework, which was not properly enforced. It was therefore necessary to increase effectiveness of safeguards also through the "upward" selection of market operators. To be allowed to operate in the market, employers must give evidence of appropriate training, expertise and technical knowledge to prevent risks and handle emergency situations.

⁴⁸ According to Title VIII, Capo I, of Legislative Decree 276/2003 and within the limits laid down in Art. No. 27 of Legislative Decree No. 81/2008.

⁴⁹ As laid down in Art. No. 30 of Legislative Decree No. 81/2008.

This led to the adoption of a specific piece of legislation in 2011⁵⁰, which extends the application of the mandatory requirements discussed above to any entity involved in the “supply chain”, including subcontractors.

Subcontracting is allowed in confined spaces only if expressly authorized by the contractor (that must, therefore, verify the subcontractors’ compliance with mandatory requirements) and if contracts are certified⁵¹.

Moreover, in case of contracts, it must be ensured that:

- before entering the workplace, all workers involved in the activity (including, where applicable, the employer) must be promptly and fully informed by the principal of all the risks that may be arise in the work area (including those related to any previous usage). This activity should have the duration that is deemed necessary and appropriate, and in any case, no less than one day;
- the employer must appoint a representative, who is adequately trained, instructed and informed of all risks existing in the workplace, who oversees the activities that take place in such environments;
- during all working phases in possibly polluted environments or in confined spaces, a working procedure specifically aimed at eliminating or minimizing the risks inherent in such activities must be adopted and effectively put in place.

With specific regard to the construction sector, and based on the foregoing “points-based system”, a set of specific requirements was additionally introduced for all firms belonging to the construction sector for the purpose of social security, including but not limited to, employers who perform the following operations: construction, hydraulic works, construction of roads, of transmission lines and distribution systems, pipelines, plants.

5.3.3. The Preparation to and Management of Natural Disasters: What Prospects for the Future?

In light of this framework, it is easy to immediately appreciate the potential role of a qualification system in terms of substantial protection, especially if properly implemented in the most vulnerable sectors, which can be developed for the management of any form of emergency, including those related to environmental and natural disasters, but even more for the “upward” prevention of the devastating effects that such

⁵⁰ Decree of the President of the Republic No. 177/2011.

⁵¹ According to Art. 75 et seq. of Legislative Decree No. 276/2003.

events may have on industrial plants, workers' safety and labour market in the affected areas. This is possible thanks to prevention measures, the proper use of employment contracts and the regular payment of social security contributions, i.e. the criteria on which the qualification system is based.

This process is all the more important if one considers that, thanks to social dialogue and industrial relations, a provision⁵² was enforced to extend the application of a qualification system to any productive sector. This measure very much relies on parties' self-regulation, which through agreements concluded by most representative employers' associations and workers' organisations can play a role in the participatory management of emergencies as well as in controlling productive activity in the medium and long run.

However, in foregoing sectors (except for confined spaces) the regulation on qualification has not yet been finalized, and therefore far from being enforced.

Nevertheless, it is true that recently the Legislator⁵³, faced with the need to eliminate unnecessary restrictions to boost production in times of crisis and to simplify procedures for employers, has confirmed the crucial importance of a sound qualification system for employers and self-employed workers to increase health and safety at work and to ensure compliance with the law in both organisational and contractual terms.

Also in this case, a legal vacuum may provide a good opportunity to develop and put in place, through collective bargaining, a valuable tool to ensure protection in the face of environmental and natural disasters.

⁵² Art. 27, paragraph 2 of Legislative Decree No. 81/2008.

⁵³ Here, reference is made to Decree law No. 69/2013, converted into Law No. 98/2013, which simplified the procedure for the approval of the relevant regulation with a view to coming to a quick enforcement.

The Vulnerable in Natural, Environmental and Other Disasters

Malcolm Sargeant *

This paper is concerned with vulnerable groups in disaster situations. The initial ambition was to focus on vulnerable workers and those in precarious work¹. It is clear, however, that insufficient research has been done on the effects of disasters on vulnerable people in the context of work and, indeed, on the effects on those in non-standard working arrangements². The focus of this paper is therefore on the position of vulnerable people in disaster situations from which we can perhaps draw some conclusions in relation to work.

There is an extensive literature on vulnerable workers and precarious work and it is perhaps important to distinguish between the two concepts. The excellent Law Commission of Ontario's report on vulnerable workers and precarious work provides this definition of precarious work³:

Precarious work is characterized by lack of continuity, low wages, lack of benefits and possibly greater risk of injury and ill health... Measures of precariousness are level of earnings, level of employer-provided benefits, degree of regulatory protection and degree of control or influence within the labour process... The major types of precarious work are self-employment, part-time (steady and intermittent) and temporary.

Precarious work is therefore the type of contractual relationship which does not consist of an open ended full time contract. It is often classified

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¹ See below for further discussion of these concepts.

² Such as temporary, casual or seasonal workers.

³ Law Commission of Ontario, *Vulnerable Workers and Precarious Work* (Toronto: December 2012); <http://www.lco-cdo.org/vulnerable-workers-final-report.pdf>

as contingent working or non-standard working. The features of precarious or contingent work are that it is work for more than one employer, it is not “full-time” and is limited in duration⁴. According to the Ontario Law Commission study this type of work lacks security and provides workers with limited benefits; and “the phenomenon has been a contributing factor in the rising rates of income inequality in many OECD countries, as well as a contributor to social unrest in some.

One useful definition of a vulnerable worker is⁵:

...someone working in an environment where the risk of being denied employment rights is high and who does not have the capacity or means to protect themselves from that abuse”.

This is a useful starting point and, of course, one can immediately see the connection with precarious employment as probably this definition is more likely to apply to those in precarious type contracts of employment such as temporary, casual and seasonal workers. The Ontario Law Commission further illustrates this point:

Although anyone may be precariously employed, precarity is more likely to affect workers in “already marginalized social locations”. This includes women, single parents (who are disproportionately women), racialized groups, new immigrants, temporary foreign workers, Aboriginal persons, persons with disabilities, older adults and youth. The link between marginalized workers and precarious employment is partly explained by their difficulty accessing higher education and skills training. It is also significant that they are more often employed in temporary and/or part-time jobs.

Thus there is a higher likelihood of vulnerable workers being in precarious work and it is possible to identify those who make up the vulnerable workforce⁶. Indeed one study estimated that one in five of the UK

⁴ See Feldman, D. C. “Toward a New Taxonomy for Understanding the Nature and Consequences of Contingent Employment”, *Career Dev. Int.* 11(1): 28–47, 2006; cited in P. Bohle, C. Pitts, and M. Quinlan “Time to Call It Quits? The Safety and Health of Older Workers”, *International Journal of Health Services* (2010) 40(1)23–41.

⁵ *Success at Work* Department for Trade and Industry (now Department for Business and Innovation), 2006;
<http://webarchive.nationalarchives.gov.uk/+http://www.dti.gov.uk/employment/employment-legislation/success-at-work/index.html>.

⁶ The UK Trades Union Congress set up a Commission on Vulnerable Employment and reported that the following were identified as being part of that vulnerable workforce: *Agency workers*: who do not have the same employment rights as others who do the same jobs; *Other “Atypical Workers”* (for Example *Casual Workers and Some Freelancers*): who face

workforce was vulnerable in this sense⁷. The figures are much higher for the developing world. The International Labour Organisation (ILO) estimated that, in 2012, some 1.49 billion workers in developing countries were in vulnerable employment⁸. This represented some 56 per cent of all workers in the developing world⁹.

Thus one can see that in a “normal” work situation there are potentially large numbers of vulnerable workers, many of whom are in precarious contractual employment relationships. If one then applies the definition of vulnerability in disaster situations, namely the capacity to anticipate, cope with, resist, and recover from the impact of a natural disaster, one can hypothesise that vulnerable workers in precarious employment situations are also likely to be the most highly vulnerable in disaster situations also.

1. Disasters

Disasters are defined by the UNISDR¹⁰ as “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources”. Thus disasters can have impacts on individuals or groups and also upon property, assets and economic and environmental well-being. In a comment attached to this definition, it is stated that disasters are often the result of a combination of exposure to a hazard; the conditions of

insecurity and inequality in the workplace; *Young workers*: who are not entitled to the same rates of the minimum wage as others and are more likely to face exploitation; *Industrial homeworkers*: who are often denied even the most basic employment rights; *Unpaid family workers*: employed across a range of businesses with no legal protection at work; *Recent migrants*: who are more likely to face extreme discrimination, dangerous working conditions and a range of other abuse – including forced labour. The Ontario report identified the following groups: Women and Single Parents, Racialised Persons, Newcomers to Canada and Established Immigrants, Temporary Migrant Workers, Aboriginal Persons, Persons with Disabilities, Youth, and Non-Status Workers.

⁷ Policy Studies Institute (2006);

http://www.psi.org.uk/news/pressrelease.asp?news_item_id=188.

⁸ The ILO definition of vulnerable workers is the sum of own-account workers and contributing family workers.

⁹ *Global Employment Trends 2013* International Labour Organisation, Geneva.

¹⁰ United Nations Office for Disaster Risk Reduction,

<http://www.unisdr.org/we/inform/terminology>.

vulnerability and insufficient capacity or measures to cope with the potential negative consequences.

This is a very wide definition and a more limited one can be found in UK government advice, namely “any unwanted significant incident which threatens personnel, buildings or the operational structure of an organisation which requires special measures to be taken to restore things back to normal¹¹”. The features of a disaster are that it is widespread or significant and that it threatens or disrupts the functioning of a community or society in a significantly negative manner. The essential difference between the definitions is the ability of the affected community or society to cope using their own resources. This may be a reflection of the magnitude of the disaster and/or of the financial and other resources available to the community to deal with the aftermath. The great Japan earthquake of 2011 and the consequent tsunami had a devastating effect and truly appalling consequences for the Japanese people with almost 16,000 people killed in Japan and many thousands more injured or missing and up to a million homes destroyed or damaged. Hurricane Katrina, which hit the Gulf Coast of the United States in 2005 resulted in deaths of over 1800 people with about 275,000 homes being damaged or destroyed¹². These are huge devastating events with large-scale impacts, but the explosion and subsequent fire at the Buncefield Oil storage depot in Hertfordshire in the United Kingdom in 2005, which was tiny when compared to the Japan earthquake or the Katrina floods, also had a devastating effect upon its smaller community. Some 43 people were injured and there was significant damage to the domestic and commercial infrastructure. Buncefield, despite the limited nature of its scope was also a disaster for the people in the surrounding community. It was also an example of a technological disaster and contrasts with the natural or environmental disasters in Japan and the USA.

¹¹ Definition taken from *How Resilient is Your Business to Disaster*, chapter 2; Home Office Publication, 2006.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61216/how-resilient-business-disaster.pdf.

¹² Venn, D. (2012) “Helping Displaced Workers Back Into Jobs After a Natural Disaster: Recent Experiences in OECD Countries”; *OECD Social, Employment and Migration Working Papers*, No. 142, OECD Publishing. http://www.oecd-ilibrary.org/social-issues-migration-health/helping-displaced-workers-back-into-jobs-after-a-natural-disaster_5k8z7k8pn2542-en.

Vulnerability in this context has been defined as the capacity to anticipate, cope with, resist, and recover from the impact of natural disaster¹³. Vulnerability is seen as a combination of the risk of experiencing a disaster event and the ability to cope with the event and its aftermath. Presumably the lesser the likelihood of coping with the disaster the more vulnerable the individual or group becomes. Others have seen a more personal dimension to this definition and defined vulnerability as meaning “the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of [in this case] natural hazards¹⁴”. Thus the consideration concerns an individual’s or a group’s personal and economic characteristics which in turn can affect the individual’s or the group’s ability to cope. Wisner¹⁵ cites the example of the major earthquake in Guatemala in 1976 where the mortality rate was much higher for the poor slum dwellers in Guatemala City than for the middle classes. The poor lived in flimsier houses on steeper slopes than the rich and had much less access to the means of social and self-protection.

The poor are more vulnerable in disaster situations. They are more likely to die, suffer injuries and have proportionately higher material losses. They also face more obstacles during the response, recovery and reconstruction phases¹⁶. Indeed the idea that natural or other disasters are somehow egalitarian in their impact, namely that all suffer from the flood or earthquake, for example, on an equal basis is not shown to be true. Natural and other disasters “do not occur in historical, political, social, or economic vacuums. Instead, the consequences of such catastrophes replicate and exacerbate the effects of extant inequalities, and often bring into view the implications of historic discrimination, legal status, language barriers, poverty and geographic vulnerabilities”.¹⁷ Thus existing

¹³ N.W. Adger (1999), “Social Vulnerability to Climate Change and Extremes in Coastal Vietnam”, *World Development*, No. 27(2), p. 249-269, cited in M. Masozera, M. Bailey, C. Kerchner “Distribution of Impacts of Natural Disasters Across Income Groups: A Case Study of New Orleans”, *Ecological Economics*, 2007, No. 63(1-2), p. 299-306.

¹⁴ B. Wisner, *At Risk: Natural Hazards, People’s Vulnerability and Disasters* (2004) Routledge, London.

¹⁵ *Ibid.*

¹⁶ A. Fothergil and Peek L.A., (2004) “Poverty and Disasters in the United States: a Review of Recent Sociological Findings”, *Natural Hazards*, No. 32, p. 89-110.

¹⁷ *When Disaster Strikes A Human Rights Analysis of the 2005 Gulf Coast Hurricanes*, The Inter-American Commission of Human Rights General Situation Hearing on Natural Disaster and Human Rights Friday, March 3, 2006, International Human Rights Law Clinic Boalt Hall School of Law March 2006.

inequalities in society are likely to be reflected in the impact of a disaster and with the scale of the subsequent effects.

2. Vulnerable Groups

Adopting this joint vulnerability approach we can focus on particular vulnerable groups in disaster situations and consider the implications for those who are both vulnerable and in precarious type employment. Neumayer and Plümper state that:

Natural disasters do not affect people equally. In fact, a vulnerability approach to disasters would suggest that inequalities in exposure and sensitivity to risk as well as inequalities in access to resources, capabilities and opportunities systematically disadvantage certain groups of people, rendering them more vulnerable to the impact of natural disasters¹⁸.

This viewpoint is supported by Oxfam who state that:

[...] disasters, however “natural”, are profoundly discriminatory. Wherever they hit, pre-existing structures and social conditions determine that some members of the community will be less affected while others will pay a higher price¹⁹.

In this paper we adopt the categories of discriminated groups considered in the 2007 World Disasters Report²⁰. This report examined *vulnerabilities based on gender, ethnicity, age and disability and considers how discrimination affects the vulnerable in emergency situations. It states that discrimination exists before any disaster strikes, but this discrimination is exacerbated during an emergency. Linking all these groups is the issue of socio-economic status:*

http://www.law.berkeley.edu/files/IHRLC/Briefing_Paper_Report_When_Disaster_Strikes_2_Mar_06.pdf (accessed October 19, 2014).

¹⁸ Neumayer, Eric and Plümper, Thomas (2007) The gendered nature of natural disasters: the impact of catastrophic events on the gender gap in life expectancy, 1981-2002. *Annals of the Association of American Geographers* No. 97(3), p. 551-566.

[http://www.lse.ac.uk/geographyAndEnvironment/whosWho/profiles/neumayer/pdf/Article%20in%20Annals%20\(natural%20disasters\).pdf](http://www.lse.ac.uk/geographyAndEnvironment/whosWho/profiles/neumayer/pdf/Article%20in%20Annals%20(natural%20disasters).pdf) (accessed October 19, 2014).

¹⁹ *The tsunami's impact on women*; Briefing Note, Oxfam.

<http://www.oxfam.org/sites/www.oxfam.org/files/women.pdf> (accessed October 19, 2014).

²⁰ *World Disasters Report 2007 Focus on discrimination*, International Federation of Red Cross and Red Crescent Societies.

www.ifrc.org/Global/Publications/disasters/WDR/WDR2007-English.pdf (accessed October 19, 2014).

Lack of access to economic or human resources or knowledge can limit the ability of some socio-economic groups to respond adequately to a disaster. Groups who traditionally experience low socio-economic status include minorities, woman-headed households, the elderly, the unemployed, the illiterate or uneducated, the ill or handicapped. In addition racial and ethnic minorities may be excluded from lines of communication and action due to cultural or language barriers²¹.

In many countries discrimination is invisible largely because of a lack of official data on the number of older people, ethnic minorities and persons with disabilities. The invisibility is made worse when aid agencies carry out emergency assessments that do not include an analysis of vulnerable people and their needs. Vulnerable groups are often excluded from the disaster planning process before, during and after an emergency²². Examples given of lack of consideration for vulnerable groups include mass distribution through airdrops which can exclude the young, old and persons with disabilities. Emergency shelters also often exclude persons with disabilities and poorly designed camps make women vulnerable to sexual violence or can inadvertently prevent minorities from accessing aid²³.

It is suggested²⁴ that the disadvantaged can suffer proportionately larger death levels as illustrated by Hurricane Katrina when many individuals died because they were unable to evacuate from the city, and where the infirm elderly, the poor, and those with disabilities were the most likely to be affected. Preparations for disasters often neglect the special needs of vulnerable populations. In a catastrophic event the vulnerable may be disabled; pregnant women; children; the elderly; prisoners; ethnic minorities with language barriers; and the impoverished.

²¹ M. Masozera, M. Bailey, C. Kerchner; "Distribution of Impacts of Natural Disasters Across Income Groups: A case Study of New Orleans", *Ecological Economics* 63 (2007) 299-306 <http://www.d.umn.edu/~pfarrell/Natural%20Hazards/Readings/Katrina%20article.pdf> (accessed October 19, 2014); this article cites Fothergill, A., Peek, L.A., 2004. "Poverty and disasters in the United States: a review of recent sociological findings", *Natural Hazards*, No. 32, p. 89–110.

²² Chapter 1, p. 13.

²³ Chapter 1, p. 15.

²⁴ Hoffman, Sharona "Preparing for Disaster: Protecting the Most Vulnerable in Emergencies", *UC Davis Law Review*, Vol. 42, p. 1491, 2009 *Case Legal Studies Research Paper No. 08-27*.

Hoffman²⁵ postulates three possible approaches to the ethical dilemmas associated with deciding how limited resources should be allocated in emergency situations. The first is a utilitarian approach which concerns using the resources to aid the greatest number of people. Thus the purpose of assistance is to save the greatest number of lives and to direct resources to those most likely to benefit. The second approach is the principle of equal chances, so resource providers need to give each individual an equal chance of surviving. This approach accepts that each individual's life is equally valuable and is a rejection of the utilitarian approach that balances overall benefits in deciding where treatment should be made available. A third approach is to create the best outcome for the least well off. This means prioritising resources to the most vulnerable because disadvantaged people will likely suffer disproportionate harm in disasters. This means of course that the distribution of resources is to be allocated on an unequal basis.

There are no simple answers to these dilemmas and, of course, rescuers are not always faced with these issues. If the rescue resources are adequate and prepared, or if the disaster is on a small scale relative to the resources of the country in which it takes place, then it may be possible to help the greatest number as well as to support the vulnerable with special resources. This is not always the case and sometimes the disaster may be of such a scale, or the resources available may be so limited that these ethical choices are made almost by default. Perhaps the only solution lies in debating these issues before the event and making adequate preparations for helping the vulnerable as well as the many.

What is true is that

[...] different people have distinct capacities, vulnerabilities and needs. Consequently, humanitarian crises affect different groups in different ways. It is crucial, therefore, that humanitarian programming is based on a clear understanding of the variant impacts of a crisis on the population²⁶.

²⁵ Hoffman, Sharona "Preparing for Disaster: Protecting the Most Vulnerable in Emergencies", *UC Davis Law Review*, Vol. 42, p. 1491, 2009 *Case Legal Studies Research Paper No. 08-27*.

²⁶ *Disasters and Diversity: a Study of Humanitarian Financing for Older People and Children under Five*, HelpAge International 2013, <http://www.helpage.org/newsroom/latest-news/new-study-reveals-lack-of-humanitarian-funding-for-older-people-and-children> (accessed October 19, 2014).

3. Gender

In disasters more women die than men and more women die at an earlier age than men as a result of the disaster. “It is the socially constructed gender-specific vulnerability of females built into everyday socio-economic patterns that lead to the relatively high female disaster mortality rates compared to men²⁷”. In other words the discrimination suffered by women continues in disaster situations. Three possible reasons for this treatment postulated are²⁸, firstly, perceived biological and physiological differences; an example given of this, but taught rather than natural, is in Sri Lanka where swimming and tree climbing skills were taught mainly to men and boys to perform tasks that are almost exclusively performed by men. This helped them survive the waves from the tsunami. Also pregnant women are less mobile than others. The second possible reason is the social norms and role behaviour adopted in societies; and an example of this might be the practice of women looking after children and the elderly and the domestic property. This can hinder their own rescue also. Women are also more likely to be at home when disaster strikes, so are affected more directly when buildings are damaged. The third reason is that a shortage of resources continues existing forms of discrimination and there are many examples of this including how women and children

²⁷ E. Neumayer, and T. Plümper, (2007), “The Gendered Nature of Natural Disasters: the Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981-2002”. *Annals of the Association of American Geographers*, No. 97(3), p. 551-566.

[http://www.lse.ac.uk/geographyAndEnvironment/whosWho/profiles/neumayer/pdf/Article%20in%20Annals%20\(natural%20disasters\).pdf](http://www.lse.ac.uk/geographyAndEnvironment/whosWho/profiles/neumayer/pdf/Article%20in%20Annals%20(natural%20disasters).pdf) (accessed October 19, 2014).

²⁸ These come from Neumayer and Plümper 2007 *op.cit.*

have a subservient place in the distribution of food aid²⁹. The position, on a global basis, is summed up in this quotation³⁰:

“In general, around the world, women are poorer than men... Women are disproportionately employed in unpaid, underpaid and non-formal sectors of economies. Inheritance laws and traditions, marriage arrangements, banking systems and social patterns that reinforce women’s dependence on fathers, husbands and sons all contribute both to their unfavorable access to resources and their lack of power to change things. The health dangers that result from multiple births can contribute to interrupted work and low productivity. Traditional expectations and home-based responsibilities that limit women’s mobility also limit their opportunities for political involvement, education, access to information, markets, and a myriad of other resources, the lack of which reinforces the cycle of their vulnerability”.

Women’s working lives also place them at risk in disasters. The gendered division of labour can have an impact and the international economy “mean women work longer hours with less social protection and are less secure economically, they are less able to prepare for and recover from destructive cyclones or floods³¹”. It is estimated that some 70 per cent of all women now hold atypical jobs in the informal economy. Jobs such as those in domestic work, microenterprise, and other home-based jobs put

²⁹ Neumayer and Plümper cite the following as evidence of this: Sen (Sen, A. K. 1988. *Family and Food: Sex Bias in Poverty*. In *Rural Poverty in South Asia*, ed. T. N. Srinivasan and P. K. Bardhan, p. 453–72. New York: Columbia University Press) has reported how women and girls were systematically disadvantaged by food relief in the aftermath of flooding in West Bengal that destroyed crops and farmland. Enarson and Morrow (Enarson, E., and B. H. Morrow, eds. 1998. *The Gendered Terrain of Disaster: Through Women’s Eyes*, Westport, CT: Praeger) refer to a relief worker’s finding of discriminatory access to relief supplies in the aftermath of the 1991 Bangladesh cyclone (similar experiences are reported by Khondker, H. 1996. “Women and Floods in Bangladesh”, *International Journal of Mass Emergencies and Disasters*, No. 14(3), p. 281– 92. A. Ager, W. Ager, and L. Long, 1995. (“The Differential Experience of Mozambican Refugee Women and Men”, *Journal of Refugee Studies*, No. 8(3), p. 265–87) found in their study of Mozambican refugees in Malawi in the late 1990s that relief policies were biased in favor of refugee men.

³⁰ E. Enarson. Gender and Natural Disasters Working Paper 1 September 2000 Recovery and Reconstruction Department, ILO Geneva’ cites at Mary Anderson, 1994, “Understanding the disaster-development continuum”, in *Focus on Gender*, 2/1 http://www.ilo.int/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_crisis/documents/publication/wcms_116391.pdf.

³¹ E. Enarson, *Gender and Natural Disasters Working, Paper 1, September 2000, Recovery and Reconstruction Department*, ILO Geneva http://www.ilo.int/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_crisis/documents/publication/wcms_116391.pdf.

informal workers at high risk of losing both shelter and economic assets in disasters³².

Of interest also of course is the position of women in the formal economy where their roles, often, are as contingent workers. This can limit their resources and make it more difficult to recover from major disasters. Self-employed women can also suffer disproportionately. On the one hand street vendors and other informal workers can lose their livelihoods when there is destruction of land, buildings and other centres of activity. On the other hand self-employed US and Canadian women in a 1997 flood reported substantial loss of business space, equipment and materials used in their home-based businesses, which ranged from child-care to professional writing and bookkeeping³³.

Perhaps because of occupational segregation women are slower at being able to return to work:

When public transportation systems shut down, day care centers and hospitals close, or family needs intensify, women may not be able to work. Some sectors are especially vulnerable. Many women are employed in the tourist industry along stormy coasts or in service and retail industries dependent upon high levels of consumption and disposable income. Women also tend to dominate as employees (and patients, students, and residents) in such public facilities as hospitals, schools, and nursing homes. When these public-sector buildings are destroyed or damaged, women may be unemployed for long periods. They also lose work indirectly. After Miami's Hurricane Andrew, for instance, many domestic workers were unemployed when the homes they cleaned were destroyed, or employers evacuated.

Generally in answer to the question as to why women are more vulnerable in disasters, the Pan American Health Organisation³⁴ provides the following summary:

- Women have less access to resources – social networks and influence, transportation, information, skills (including literacy), control over land and other economic resources, personal mobility, secure housing and employment, freedom from violence and control over decision-making - that are essential in disaster preparedness, mitigation and rehabilitation.

³² Enarson 2000 *op.cit.*

³³ Enarson 2000 *op.cit.*

³⁴ *Gender and Natural Disasters*, Pan-American Health Organisation Fact Sheet <http://www1.paho.org/English/DPM/GPP/GH/genderdisasters.PDF> (accessed October 19, 2014).

- Women are victims of the gendered division of labour. They are over represented in the agriculture industry, self-employment and the informal economy, in under-paid jobs with little security and no benefits such as healthcare or union representation.
- Because women are primarily responsible for domestic duties such as childcare and care for the elderly or disabled, they do not have the liberty of migrating to look for work following a disaster. Men often do migrate, leaving behind very high numbers of female-headed households.
- Because housing is often destroyed in the disaster, many families are forced to relocate to shelters. Inadequate facilities for simple daily tasks such as cooking means that women's domestic burden increases at the same time as her economic burden, leaving her less freedom and mobility to look for alternative sources of income.
- When women's economic resources are taken away, their bargaining position in the household is adversely affected.
- Disasters themselves can serve to increase women's vulnerability. Aside from the increase in female-headed households and the fact that the majority of shelter residents are women, numerous studies have shown an increase in levels of domestic and sexual violence following disasters.
- As one of the primary aspects of women's health in particular, reproductive and sexual health are beginning to be recognized as key components of disaster relief efforts, however attention to them remains inadequate and women's health suffers disproportionately as a result³⁵.

Women and girls are at higher risk of sexual violence, sexual exploitation and abuse, trafficking and domestic violence in disasters³⁶. There is an interesting and somewhat alarming example given of violence against women in post-Katrina trailer parks:

³⁵ This summary is supported by the information and views in an Oxfam document: *The Tsunami's Impact on Women*, Briefing Note Oxfam <http://www.oxfam.org/sites/www.oxfam.org/files/women.pdf> (accessed October 19, 2014).

³⁶ *World Disasters Report 2007 Focus on discrimination*, International Federation of Red Cross and Red Crescent Societies, www.ifrc.org/Global/Publications/disasters/WDR/WDR2007-English.pdf (accessed October 19, 2014), Chapter 5, p. 121.

Over 3.2 million people were forced from their homes after the hurricane. Of these some 99,000 relocated to temporary trailer parks in Louisiana and Mississippi. In 2006 an NGO, the International Medical Corps, conducted a survey and found very high rates of gender-based violence; Some 5.9 rapes per day per 100,000 women were reported (equivalent to 527 rapes amongst the 32,841 displaced women). This was over 53 times higher than the highest state baseline figure (0.11 per day per 100,000 women); intimate partner rape was 16 times higher than the US yearly rate; the rate at which women experienced beatings was three times the US yearly rate³⁷.

There is also a special issue concerning pregnant women in disaster emergencies, particularly issues related to premature deliveries, underweight infants, and infant mortality. Some women may have to deliver babies without the benefit of hospital care. Pregnant women also run the risk of being evacuated without access to medical records containing information critical to their welfare or that of their child³⁸.

4. Ethnicity

According to the World Disasters report 2007, institutional, community and individual racial prejudice can add to problems faced by minorities. In disaster relief operations, prejudice towards specific groups is often the main cause of discrimination. The report cites a number of examples concerning the Roma, who are amongst the most discriminated against population group in Europe³⁹.

In 2005 heavy rains caused floods and landslides in Romania, affecting thousands of people and destroying hundreds of homes. It was the worst flooding to hit the country in 50 years⁴⁰. The floods and storms killed 76 people, and caused at least 1.66 billion Euros in damage. Flooding also affected about 656,392 hectares of agricultural land, 10,420 kilometres of

³⁷ *World Disasters Report 2007 Focus on Discrimination*, International Federation of Red Cross and Red Crescent Societies, www.ifrc.org/Global/Publications/disasters/WDR/WDR2007-English.pdf (accessed October 19, 2014), Chapter 5, p. 123.

³⁸ Hoffman, Sharona "Preparing for Disaster: Protecting the Most Vulnerable in Emergencies", *UC Davis Law Review*, Vol. 42, p. 1491, 2009 *Case Legal Studies Research Paper No. 08-27*.

³⁹ See, for example, European Union Agency for Fundamental Rights EU-MIDIS; European Union Minorities and Discrimination Survey Data in Focus Report 1: The Roma http://fra.europa.eu/sites/default/files/fra_uploads/413-EU-MIDIS_ROMA_EN.pdf.

⁴⁰ European Commission Humanitarian Aid and Civil Protection; http://ec.europa.eu/echo/civil_protection/civil/floods_2005.htm.

roads, 23.8 kilometres of railway, 9,113 bridges and footbridges and contaminated 90,394 wells⁴¹.

The Roma faced not only floodwater but also entrenched attitudes. The Sofia Echo “one of Bulgaria’s leading English language newspapers” reported that “floods have also brought a considerable increase in infectious diseases to the city... Health officials said that the rate of infection among Roma was higher, because of the minority’s disregard for personal hygiene⁴²”. In addition to overt prejudice there was indirect discrimination. The Romanian NGO Romani CRISS is reported as stating that “After the floods, the Romanian government offered financial and material support for rebuilding houses, but it was conditional on having property papers. Most Roma don’t have such papers and are excluded from the benefits of rehabilitation⁴³”.

Other examples of such discriminatory attitudes are:

- After the floods from Hurricane Katrina (2005), New Orleans City Councilman Oliver Thomas says “that people were too afraid of black people to go in and save them. He claimed rumours of shooting and riots were making people afraid to take in those being portrayed as alleged looters⁴⁴”.
- After the Indian Ocean tsunamis, Dalits were forbidden by other castes from drinking water from UNICEF water tanks; there were also reports of other aid supplies not reaching them or being diverted by members of other castes. The solution was for the Tamil Nadu state government to provide segregated facilities⁴⁵.

There can be, and often is, a link between ethnicity and economic and social disadvantage. One review of studies on the relationship between poverty and disasters in the US showed that socio-economic status is significant. According to these studies ‘the poor are more likely to die, suffer from injuries, have proportionately higher material losses; have

⁴¹ <http://www.climateadaptation.eu/romania/river-floods/>.

⁴² *World Disasters Report 2007*, Chapter 2, p. 40.

⁴³ *World Disasters Report 2007*, Chapter 2, p. 41.

⁴⁴ *World Disasters Report 2007*, Chapter 2, p. 47.

⁴⁵ *World Disasters Report 2007*, Chapter 2, p. 47.

more psychological trauma; and face more obstacles during the phases of response, recovery, and reconstruction⁴⁶.

Those with these disadvantages can suffer from disproportionate harm during and after disasters. Examples of this are, firstly, the Chicago heat wave of 2007 in which some 700 people died. African Americans were one and a half times more likely to die than whites because they were impoverished, segregated, and lacked “social capital”⁴⁷.

The second example is Hurricane Katrina where one report⁴⁸ stated:

Twenty-eight percent of people in New Orleans live in poverty. Of these, 84 percent are African-American. Twenty-three percent of people five years and older living in New Orleans are disabled. An estimated 15,000 to 17,000 men, women, and children in the New Orleans area are homeless. The lowest lying areas of New Orleans tend to be populated by those without economic or political resources. The city’s Lower Ninth Ward, for example, which was especially hard hit and completely inundated by water, is among its poorest and lowest lying areas. Ninety-eight percent of its residents are African-American.

The report also added that:

Of the households living in poverty, many have no access to a car: 21,787 of these households without a car are black; 2,606 are white. This lack of access became crucial, given an evacuation plan premised on the ability of people to get in their cars and drive out of New Orleans.

The issue is not that these residents were ignored in the post disaster evacuation, but that this treatment and “disregard by government health, safety, and environmental agencies for the lives and circumstances of the most vulnerable marks the everyday experience of these people”.

⁴⁶ M. Masozera, M. Bailey, C. Kerchner, “Distribution of Impacts of Natural Disasters Across Income Groups: A case study of New Orleans”, *Ecological Economics*, No. 63 (2007), p. 299-306;

<http://www.d.umn.edu/~pfarrell/Natural%20Hazards/Readings/Katrina%20article.pdf> (accessed October 19, 2014).

⁴⁷ D.A. Farber, *Disaster Law and Inequality*, 25 *Law & Ineq.* 297 (2007)

⁴⁸ Center For Progressive Reform, *An Unnatural Disaster: The Aftermath Of Hurricane Katrina*, p. 34-35, (2005);

http://www.progressivereform.org/articles/Unnatural_Disaster_512.pdf (accessed October 19, 2014), also cited in Hoffman, *op.cit.*

According to one analysis⁴⁹ the U.S. Government's evacuation plans did not take into account the difficulties faced by low-income African American and immigrant communities and effectively abandoned these communities to fend for themselves in the face of a Category 4 hurricane. In New Orleans, many of these residents who could not self-evacuate were shuttled to shelters in the city, such as the Superdome. The New Orleans Convention Center, although never officially designated as a place of refuge, swarmed with residents who arrived there awaiting buses to evacuate them out of the city; those buses never came. Nearly 25,000 people were eventually evacuated to the Superdome and nearly 20,000 gathered at the Convention Center. An estimated 50,000, overwhelmingly African American, remained elsewhere in New Orleans, on rooftops and in upper floors of office buildings.

A further incident occurred in the aftermath of Katrina, when a mostly black crowd of New Orleans residents attempted to escape across the bridge to Gretna. They were turned back by armed police because Gretna refused to give them shelter or help them evacuate further⁵⁰.

Linked to this issue is the position of immigrants who "also suffered disproportionately in the aftermath of Katrina". Illegal immigrants are in even a worse position. In the aftermath of Katrina they were treated as eligible for immediate post-emergency services but not for any long-term shelter or food assistance. Of course many "undocumented aliens" will avoid using the assistance available for fear of detection and capture⁵¹.

5. Disability

According to the United Nations, the disabled are more likely to be left behind or abandoned during evacuation in disasters and conflicts due to a lack of preparation and planning, as well as inaccessible facilities and services and transportation systems. Most shelters and refugee camps are not accessible and people with disabilities are often turned away from

⁴⁹ *When Disaster Strikes A Human Rights Analysis of the 2005 Gulf Coast Hurricanes; The Inter-American Commission of Human Rights General Situation Hearing on Natural Disaster and Human Rights Friday March 3 2006*, International Human Rights Law Clinic Boalt Hall School of Law, March 2006;

http://www.law.berkeley.edu/files/IHRLC/Briefing_Paper_Report_When_Disaster_Strikes_2_Mar_06.pdf (accessed October 19, 2014).

⁵⁰ D. Farber, who cites P. Clark, *Bridge to Nowhere*, <http://www.law.berkeley.edu/library/disasters/Clark.pdf>.

⁵¹ D.A. Farber, *Disaster Law and Inequality*, 25 *Law & Ineq.* 297 (2007).

shelters and refugees camps due to a perception that they need “complex medical” services⁵². Many agencies, according to the World Disasters Report 2007, regard disability as a specialised subject so refer disabled people on to specialised agencies, but often their basic needs are the same as everyone else’s – water, sanitation, shelter, food.

Disruption to physical, social, economic, and environmental networks and support systems affect persons with disabilities much more than others. There is also a potential for discrimination based on disability when resources are scarce⁵³.

According to the World Disasters Report 2007, persons with disabilities are doubly vulnerable to disasters, both on account of their impairments and poverty. Despite this they are often ignored or excluded at all levels of disaster preparedness, mitigation and intervention⁵⁴. The report points out that disasters also create disabilities. It categorises the various groups as

- Those with an injury that may be at risk of developing into an impairment;
- People whose injuries result in permanent impairment;
- People who were already disabled prior to the disaster;
- People with chronic diseases which can deteriorate without medication (HIV, epilepsy, diabetes).

Article 11 of the UN Convention on the Rights of Persons with Disabilities 2006⁵⁵ is concerned with situations of risk and humanitarian emergencies. It provides that:

States Parties shall take, in accordance with their obligations under international law [...] all necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, including situations of armed conflict, humanitarian emergencies and the occurrence of natural disasters.

Article 4.1, also provides that “States Parties undertake to ensure and promote the full realization of all human rights and fundamental freedoms for all persons with disabilities without discrimination of any kind on the basis of disability”.

⁵² *Disability, Natural Disasters and Emergency Situations*, United Nations;
<http://www.un.org/disabilities/default.asp?id=1546>.

⁵³ *ibid.*

⁵⁴ Chapter 4, p. 87.

⁵⁵ See <http://www.un.org/disabilities/default.asp?id=150>.

In the aftermath of a conflict or disaster, people with pre-existing impairments may lose family members or carers, be moved to temporary housing or shelter, and lose mobility and other aids, thus increasing their vulnerability. Some will not have been able to flee with their families, and may have been separated or left behind. They may have difficulty accessing information, food, water and sanitation sources. Persons with disabilities are often a low priority in service provision – furthering isolation, social exclusion and marginalisation⁵⁶.

Some examples of the extra issues faced by the disabled in the Hurricane Katrina aftermath are given by Hoffman⁵⁷:

The hearing impaired found that eighty per cent of shelters⁵⁸ did not have text telephones; sixty per cent of shelters had no television with open caption capability; only fifty-six per cent of shelters posted announcements that were otherwise made verbally; and American Sign Language interpreters were available in fewer than thirty per cent of shelters. Meanwhile, low-income African Americans often could not evacuate because they had no personal transportation⁵⁹. Furthermore, those with mobility impairments found that only five per cent of the temporary housing provided by the Federal Emergency Management Agency was accessible to them even though twenty-five per cent of the displaced population needed accessible housing.

Mobility is of course a major issue for many disabled people. After the Indian Ocean tsunami many persons with disabilities were unable to escape and drowned. A November 2005 poll by Harris Interactive Survey conducted for AARP found that about 13 million people aged 50 and older in the United States said they would need help to evacuate in a

⁵⁶ *World Disasters Report 2007*, Chapter 4, p. 100.

⁵⁷ Hoffman, Sharona *op.cit.*

⁵⁸ Hoffman cites Nat'l Council on Disability, *The Impact of Hurricanes Katrina and Rita on People with Disabilities: A Look Back and Remaining Challenges 14* (2006), http://www.ncd.gov/newsroom/publications/2006/pdf/burricanes_impact.pdf; Paul Campbell et al., Harvard Sch. Of Pub. Health, *Reaching Vulnerable Populations in Public Health Emergencies: Conference Proceedings 9* (2007).

⁵⁹ The Hoffman article cites D.P. Andrulis et al., *Preparing Racially and Ethnically Diverse Communities for Public Health Emergencies*, 26 HEALTH AFF. 1269, 1269 (2007) (“The WhiteHouse, Congress, and State and local governments have made emergency preparedness one of their highest priorities.”); A. Katz et al., *Preparing for the Unknown, Responding to the Known: Communities and Public Health Preparedness*, 25 HEALTH AFF. 946, 946 (2006) (finding that “bioterrorism preparedness remains a high priority for federal, state, and local governments” and that “the capabilities of local public health and emergency response agencies” had improved significantly since 2004).

future disaster, and about half of these people would require help from someone outside of their household⁶⁰.

Those with chronic illnesses may also be in a vulnerable situation. Their situations can worsen due to lack of resources such as food, water and adequate medicines. Following Hurricane Katrina over 200,000 people with chronic medical conditions who were displaced or isolated by the storm had no access to their usual medications and sources of supply and even those who brought the recommended three day supply to a shelter ran out of pills, resulting in the need for emergency management⁶¹.

There is a link between the problems experienced by the disabled and the elderly (see below).

6. Older People

Older people constitute a significant proportion of the global population; estimates for 2013 show those over 50 account for 21.7 percent of the population and those over 60, 11.8 percent. By 2050, the over-60 population will account for 22 per cent, exceeding the numbers of children under 15 for the first time in history⁶².

HelpAge's analysis⁶³ is that often all the victims of humanitarian' crises are considered as a single homogenous group and there is a lack of age analysis of a population and how this may affect levels of vulnerability. Older people (as well as young children) are 'highly sensitive to shocks associated with both chronic and sudden-onset humanitarian crises'. The specific risks associated with age include access to adequate health care and nutritional support. There are particular challenges for older people in

⁶⁰ When Disaster Strikes A Human Rights A Human Rights Analysis of the 2005 Gulf Coast Hurricanes; The Inter-American Commission of Human Rights General Situation Hearing on Natural Disaster and Human Rights Friday March 3 2006; International Human Rights Law Clinic Boalt Hall School of Law March 2006
http://www.law.berkeley.edu/files/IHRLC/Briefing_Paper_Report_When_Disaster_Strikes_2_Mar_06.pdf.

⁶¹ *Disaster Planning Goal: Protect Vulnerable Older Adults*; Center for Disease Control and Prevention, http://www.cdc.gov/aging/pdf/disaster_planning_goal.pdf.

⁶² *Disasters and Diversity: a Study of Humanitarian Financing for Older People and Children Under Five*,

HelpAge International 2013, <http://www.helpage.org/newsroom/latest-news/new-study-reveals-lack-of-humanitarian-funding-for-older-people-and-children/> citing data from United Nations, Department of Economic and Social Affairs, Population Division (2011). *World Population Prospects: The 2010 Revision, CD-ROM Edition*.

⁶³ *Ibid*.

terms of mobility and visual and aural impairment that inevitably impact on the ability to access services and support. One issue, for example, is the extent to which the extended family will protect its older members, but, in the Indian Ocean tsunami of 2004, HelpAge India identified 9000 older people who had been missed in the rush for assistance.

According to the World Disasters Report 2007, factors which influence discrimination against older people in disasters include the lack of a United Nations agency dedicated to ageing issues; the failure of many humanitarian agencies to develop a clear rationale for reaching older people; the lack of specific data and information on this group; and the assumption that older people will be covered by the general response provisions.

Sometimes older people are disproportionately affected by disasters; the 2003 heat wave in France, for example, claimed nearly 15,000 lives, 70 per cent of whom were older than 75 years⁶⁴. One view, however, is that “these thousands of elderly victims didn’t die from the heat wave as such, but from the isolation and insufficient assistance they lived with day in and out⁶⁵”. Similarly, in the Chicago heat wave of 1995 some 600 people died and 75 per cent of the victims were aged 65 plus. One view here was also that “the city, through its negligence, failed to realize the potential danger to those most vulnerable to temperature extremes before the heat wave arrived⁶⁶”. When one looks at the Katrina aftermath approximately 71 per cent of the victims in Louisiana were older than sixty and 47 per cent were over 77. Over 200 of these people died in nursing homes or hospitals and, sad to say, only 41 of the 130 nursing homes around the Texas gulf coast had any evacuation plans⁶⁷.

⁶⁴ The searing August heat claimed about 7000 lives in Germany, nearly 4200 lives in both Spain and Italy. Over 2000 people died in the UK, with the country recording its first ever temperature over 100° Fahrenheit on August 10.

European Heat Wave Caused 35,000 Deaths, New Scientist 2003;
<http://www.newscientist.com/article/dn4259-european-heatwave-caused-35000-deaths.html#.UgC89xpwaTI>.

⁶⁵ Stephane Manton, Red Cross official. World Disasters Report, Chapter 3, p. 75.

⁶⁶ A. Petrovic, *The Elderly Facing Gentrification: Neglect, Invisibility, Entrapment and Loss*, 15 *Elder L.J.* 533, cited in *Professor Klein In the Wake of a Natural Disaster: The Elderly Left Behind*, California School of Law 2009.

⁶⁷ Mead, Robert. *St Rita’s and Lost Causes: Improving Nursing Home Emergency Preparedness*, 4 *MARQEA* 153 at 167 (Spring 2006) cited in *Professor Klein In the Wake of a Natural Disaster: The Elderly Left Behind* California School of Law 2009.

The prevalence of disability rises with age. In Britain, for example, around 6 per cent of children are disabled, compared to 16 per cent of working age adults and 45 per cent of adults over state pension age⁶⁸. In the USA some 54 per cent of adults aged 65 and over report having some type of disability and 20.4 per cent having difficulty with going outside their home⁶⁹. In disaster situations where there is a need to evacuate, these mobility issues are important. Many older persons with disabilities are living in residential settings, rather than in care homes. The latter will tend to be in places with evacuation plans, but those living independently may need extra resources to be able to evacuate and also special transportation that can cope with wheelchairs, walking frames or other equipment. In addition many will have health issues which require medication and events such as the Katrina Hurricane can severely limit access to regular supplies⁷⁰. HelpAge's guidelines for best practice⁷¹ states that

Isolated, older people are often left to fend for themselves as those around them struggle to ensure their own survival and that of their families. In the chaos associated with the early stages of emergencies, older people are physically less able than most other adults to struggle for food and other resources. They cannot travel long distances to where resources may be more readily available. They find it difficult to endure even relatively short periods without shelter and amenities.

The capacity of the community to take on the care of its vulnerable members is seriously compromised by the lack of food, medical, material and human resources associated with emergencies.

According to HelpAge older people identified the following as key issues and needs in an emergency: Firstly, basic needs such as shelter, fuel, clothing, bedding, household items; secondly, mobility and issues related to incapacity, population movement and transport, disability; third, health: access to services with appropriate food, water, sanitation plus psychosocial needs; fourthly, family and social: separation and issues related to dependants, security, changes in social structures, loss of status;

⁶⁸ *Disability Facts and Figures*, Office for Disability Issues; <http://odi.dwp.gov.uk/disability-statistics-and-research/disability-facts-and-figures.php#g>.

⁶⁹ L.C., McGuire, E.S. Ford, C.A. Okoro, *Natural Disasters and Older US Adults with Disabilities: Implications for Evacuation*, *Disasters*, 2007 Mar, No. 31(1), p. 49-56.

⁷⁰ *Ibid.*

⁷¹ *Older People in Disasters and Humanitarian Crises: Guidelines for Best Practice*, HelpAge International; <http://www.helpage.org/silo/files/older-people-in-disasters-and-humanitarian-crises-guidelines-for-best-practice.pdf>.

finally, economic and legal issues such as income, land, information, documentation, skills training.

7. Labour Market Issues

An underlying assumption in this paper is that there is a link between belonging to a vulnerable group and taking up precarious type working⁷². We have only focussed on four vulnerabilities, but it is worth noting that there are probably many others, e.g. levels of education and migration status, both of which may affect employment status. It is also worth noting that all those in precarious working relationships are likely to be vulnerable in disaster situations. In the event of a disaster, these workers would be amongst the most vulnerable in terms of losing their jobs.

Hurricane Katrina hit the Gulf States of the USA on August 29 2005. Over 1800 lives were lost, the great majority being in Louisiana. Some 71 per cent of the Louisiana victims were older than 60 years. Approximately 275,000 homes were damaged or destroyed. Many businesses were damaged. In Louisiana, for example, some 95 per cent of all businesses were located in flooded areas, whilst, in Mississippi, nearly half of all businesses were located in areas with “catastrophic” storm damage⁷³.

Some of the impacts of such a disaster on labour markets include disruptions to labour supply resulting from loss of life, injuries and evacuation; damage to the physical and social infrastructure and long-term health problems caused by the disaster. There may be disruptions to communications and energy supplies. There may also be a resulting skill shortage due to the eventual mix of the population and employers⁷⁴.

Many will close either temporarily or permanently and this will affect employment levels, at least in the short term. In Louisiana non-farm payroll employment fell by 241 000 in the two months following Hurricane Katrina, equivalent to 12 per cent of total state employment. State unemployed claimant counts rose dramatically. September claims more than tripled in Louisiana, to 147,126, while New Orleans claims

⁷² Those employment relationships which are not full-time, open ended contracts of employment; such as part time, temporary, fixed term and self employed working.

⁷³ D. Venn, (2012), “Helping Displaced Workers Back Into Jobs After a Natural Disaster: Recent Experiences in OECD Countries”, *OECD Social, Employment and Migration Working Papers*, No. 142, OECD Publishing;
<http://dx.doi.org/10.1787/5k8zk8pn2542-en>.

⁷⁴ *Ibid.*

increased to 58,275, more than 5 times their August level. Women and young people showed the most dramatic increases. The number of women claimants quadrupled, and the women's share of total claimants rose to 56 percent. Young claimants (16-to-19-year-olds) in Louisiana totalled 2,639 in September, up from 170 in August⁷⁵.

Some 25 percent of businesses in New Orleans had reopened within four months, 38 per cent within ten months and 66 per cent within two years of the hurricane. "The biggest barrier to reopening in the early months related to uncertainty about the ability of flood levees to protect the city from further disasters as well as lack of customers. After ten months, the main concerns related to the adequacy of infrastructure (including levees, utilities and communication) as well as problems finding staff⁷⁶". The evidence seemed to be that businesses had problems finding skilled staff as many workers had been displaced. The biggest barrier to displaced workers returning to work was lack of housing⁷⁷. The mix of industries in an area may change after a major disaster and, in Hurricane Katrina's case, there were many job losses in the service sector leading to a disproportionate impact on women workers who predominated in the sector.

Early on Sunday 11 December 2005 a series of explosions and subsequent fire destroyed large parts of the Buncefield oil storage depot in Hemel Hempstead, Hertfordshire, UK. It caused widespread damage to neighbouring properties. The Buncefield depot was an important centre for the distribution of fuels to London and south-east England, including Heathrow Airport.

The main explosion took place at 6.01 am and was followed by a large fire that engulfed 23 large fuel storage tanks. Some 43 people were injured but there were no fatalities. There was significant damage to both commercial and residential properties near the site. About 2000 people had to be evacuated from their homes. The fire burnt for 5 days and destroyed most of the site. It emitted a large plume of smoke into the atmosphere that dispersed over Southern England and beyond.⁷⁸ The explosions were felt in the local area, causing widespread structural damage to both

⁷⁵ S.P. Brown, S.L. Mason, and R.B. Tiller, *The Effect of Hurricane Katrina on Employment and Unemployment*, Bureau of Labor Statistics Monthly Labour Review August 2006 p.52-69; <http://www.bls.gov/opub/mlr/2006/08/art5full.pdf>.

⁷⁶ *Ibid.*

⁷⁷ *Ibid.*

⁷⁸ *The Buncefield Incident 11 December 2005 The Final Report of the Major Incident Investigation Board.*

commercial and residential buildings, and were reported to have been heard as far away as the Netherlands. Further explosions occurred and the fire continued until it was finally under control by the evening of Wednesday 14⁷⁹.

Businesses on the nearby industrial estate were badly disrupted. At the time of the explosion the estate housed 630 businesses and employed about 16,500 people. Some premises were destroyed and others required significant repair work. A few companies went into liquidation. Some jobs had to be relocated, but many of these were temporary. Other problems for employers included increased operating costs and an inability to meet existing orders and a lack of new orders coming in. Total losses to nearby companies were estimated to be around £100m⁸⁰.

The most significant community impact was on people who were “economically fragile” – who were just about managing financially, but could not sustain a loss of income or increased expense, even for a short period. By the end of 2007 there were over 900 Buncefield-related redundancies. There were a large number of temporary and casual employees working in the business area who lost earnings immediately. Some families lost both incomes. Many people who did retain their jobs had their hours reduced and so lost income. Others were relocated, resulting in increased costs and more time spent away, which has affected ability to manage childcare⁸¹. Official unemployment figures at the district level rose by 15 per cent in the six months between October 2005 and April 2006. Where a new job was found and individuals often had to take a pay cut (due either to time pressure related to being out of work, or to an over-supply of skilled individuals looking for work locally). This had a knock-on for many in the local employment market, onto those not directly affected by Buncefield, with similar outcomes. Seasonal or part-time workers (e.g. university students) are amongst those who were unable to find short-term employment.

⁷⁹ *The Public Health Impact of the Buncefield Oil Depot Fire*, Health Protection Agency (now part of Public Health England), 2006;
<http://webarchive.nationalarchives.gov.uk/20140714084352/http://www.hpa.org.uk/Publications/EmergencyPreparationAndResponse/0607PublicHealthImpactoftheBuncefieldOilDepotFire/>.

⁸⁰ *Buncefield Social Impact Assessment Final Report January 2007*;
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78983/Buncefield-Social-Impact-Assessment-Final_20Report_0.pdf.

⁸¹ *Buncefield Incident Community Impact*, Dacorum Borough Council;
<http://www.dacorum.gov.uk/docs/default-source/news-events/buncefield-incident-community-impact.pdf?Status=Master&sfvrsn=0>.

A large number of jobs were relocated. According to the business impact study, by March 2006 there were 90 “severely impacted” firms on the industrial estate, or around 15 percent of the total. Of the 25 'severe impact' firms that returned a business survey, 16 (64 per cent) had moved out entirely, and a further four (16 percent) partially. Many more were uncertain of their future on the estate⁸². Employees working with agencies or contractors (e.g. cleaners, caterers, etc), were hit almost immediately. Seasonal workers were also badly affected, particularly because the incident fell into the Christmas period. Warehousing staffs in particular were affected badly in this early period, as products were not being traded or transported⁸³.

These two events are very different in their scale and impact but both Katrina and Buncefield have been extensively documented. In the latter case there is some information about the impacts on those engaged in precarious work. In Katrina’s case there is more on the issue of the vulnerable in such disasters.

This paper set out to investigate the impact on precarious work and vulnerable workers of natural, environmental and other disasters and really the only conclusion that can be reached is that more work and research needs to be done. It is clear that the vulnerable are more adversely affected in such situations than others and that this is likely to be repeated in the work environment. It is also clear that the effect of a disaster on an area can lead to a change in the type of employment available as well as the mix of population. This is likely to adversely affect the most those who are in temporary and other forms of precarious working, or those that are seeking such work.

⁸² *Ibid.*

⁸³ *Ibid.*

The Current Situation and Future Problems of Employment in the Disaster Area

Masahiko Fujimoto *

1. Overview of Employment in the Six Prefectures of Tohoku

Based on the jobs-to-applicants ratio in the six prefectures of Tohoku, the employment situation in the three prefectures affected by the tsunami and nuclear power accident (Miyagi, Iwate and Fukushima) changed dramatically between six months after the disaster (as of October 2011) and eighteen months after the disaster (as of October 2012). At the six-month point, employment in coastal areas most damaged by the tsunami was characterized by a “shortage of jobs” for local residents looking for work, owing to a mismatch of working locations, occupations, etc. At the eighteen-month point, however, this had changed to a “shortage of labor”, whereby local companies could not hire the human resources they wanted in the disaster-affected area.

Although this situation was temporarily boosted by reconstruction demand in the construction industry and elsewhere, the long-term prospects for problems of the employment structure in Tohoku seem by no means rosy. In this section, the situation of employment in the three disaster-affected prefectures (particularly Miyagi Prefecture) will be analyzed in detail.

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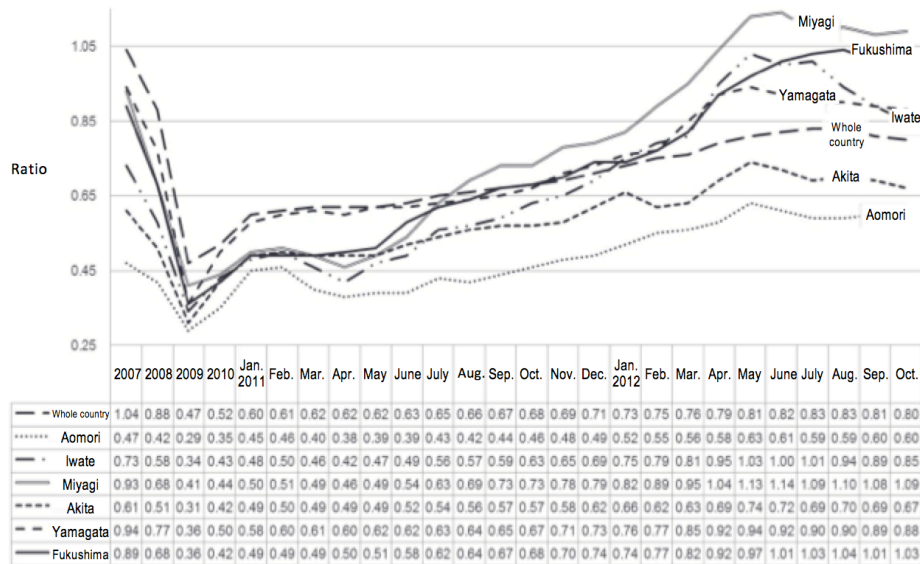
1.1. Trends in the Jobs-to-applicants Ratio in the Six Prefectures of Tohoku

In the three disaster-affected prefectures, the jobs-to-applicants ratio started to rise rapidly from around June 2011, until it passed 1.0 in Miyagi Prefecture in April 2012 and in all three prefectures by June of that year. In Aomori and Akita Prefecture, by contrast, the ratio has remained below the national average after the disaster.

As of October 2012, the three disaster-affected prefectures of Miyagi, Fukushima and Iwate (among others) faced a severe problem of local labor shortages, on a par with the situation before the Lehman Shock of 2008. However, one should hesitate to judge the employment situation optimistically, based only on quantitative relationships between job openings and job seekers. It is vital that detailed analysis be conducted on differences between coastal and inland areas, types of jobs available in each, and so on.

In Aomori and Akita Prefectures, on the other hand, there are fewer local job openings, and job seekers looking for work locally are still having difficulty in finding employment. This employment situation is thought to manifest the problem of structural shrinkage in employment opportunities inherent to Tohoku since before the disaster.

Figure 1. Trends in the jobs-to-applicants ratio in the six prefectures of Tohoku†.



Source: Compiled from Employment Referrals for General Workers, Ministry of Health, Labour and Welfare (long-term time series tables up to October 2012: <http://mhlw.go.jp/stf/boudou/2r9852000002pf1g.html> (Accessed December 1, 2012).

1.2. Change in New Openings in the Six Prefectures of Tohoku, by Industry

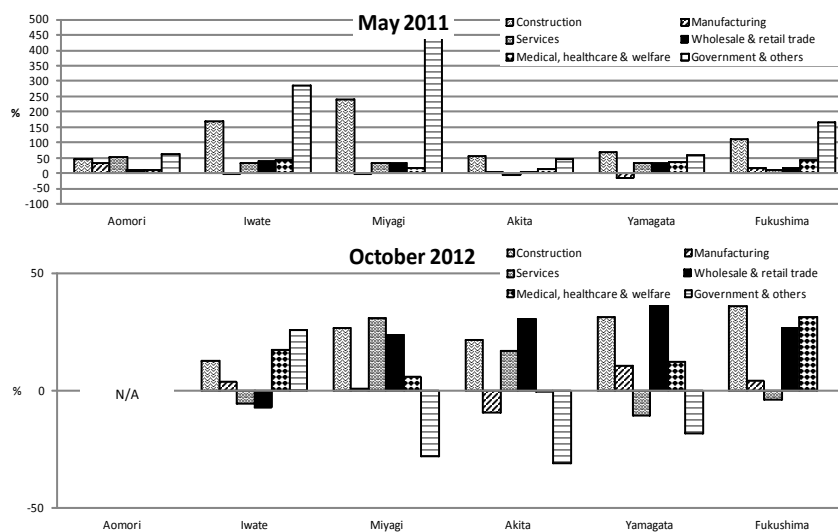
The year-on-year change in new job openings in the six prefectures of Tohoku by industry will now be compared between a point soon after the disaster (May 2011) and eighteen months afterwards (October 2012) (figures for Aomori Prefecture are unknown, as no data were published).

Immediately after the disaster, jobs in public services increased most sharply, mainly in the three disaster-affected prefectures, due to increased allocations as a temporary employment measure (e.g. temporary employment of security guards). New hiring in the construction sector increased the next most rapidly. Eighteen months after the disaster, however, temporary employment and other public service openings in the three disaster-affected prefectures had decreased sharply. Nevertheless, new openings in the construction sector immediately after the disaster remained brisk, and this

† Jobs-to-applicants ratio (seasonally adjusted) (excluding new graduates, including part-timers) (Annual averages are original figures).

had a wave effect on the non-affected prefectures of Yamagata and Akita. New job openings in the manufacturing sector increased most notably in Yamagata and only slightly in Fukushima and Iwate, but turned to a decline in Akita Prefecture. New job openings in services showed the highest growth rate in Miyagi and also grew in Akita, but a decreasing trend was noted in Yamagata, Iwate and Fukushima Prefectures.

Figure 2. Year-on-year change in new job openings in the six prefectures of Tohoku, by industry (comparison between May 2011 and October 2012).



Source: Compiled from statistical data published by Regional Labour Bureaus of the six Tohoku prefectures.

2. The Employment Situation in Miyagi Prefecture

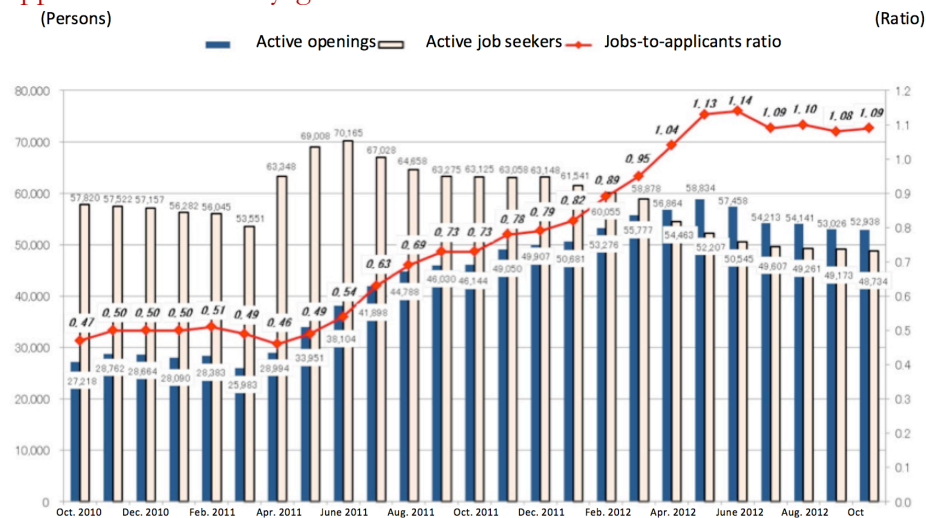
2.1. Trends in Active Openings and Active Job Seekers in Miyagi Prefecture

There were around 56,000 active job seekers in Miyagi Prefecture up to just before the disaster in February 2011, but this started to increase sharply immediately after the disaster on March 11th that year, peaking at around 70,000 three months later in June. Thereafter, the number of active job seekers turned to a decrease, falling to 48,000 (less than just before the disaster) in October 2012.

Conversely, the number of active openings in Miyagi Prefecture continued to grow rapidly from immediately after the disaster, reaching nearly 59,000 fourteen months later in May 2012. Thereafter, the number of active openings continued to decrease gradually, and stood at around 53,000 as of October 2012.

As a result, the jobs-to-applicants ratio temporarily slumped to 0.46 in April 2011 after the disaster, but then continued to rise, peaking at 1.14 in June 2012, fifteen months after the disaster. It remained at a high level thereafter, standing at 1.09 (the 3rd highest in Japan) as of October that year. In other words, the state of labor shortage (i.e. more job openings than job seekers looking for work) in Miyagi Prefecture as a whole continued for a while from April 2012, about a year after the disaster.

Figure 3. Trends in active openings, active job seekers and the jobs to-applicants ratio in Miyagi Prefecture[‡].



Source: Reproduced from Miyagi Regional Labour Bureau data.

2.2. Trends in New Job Openings and New Job Seekers in Miyagi Prefecture

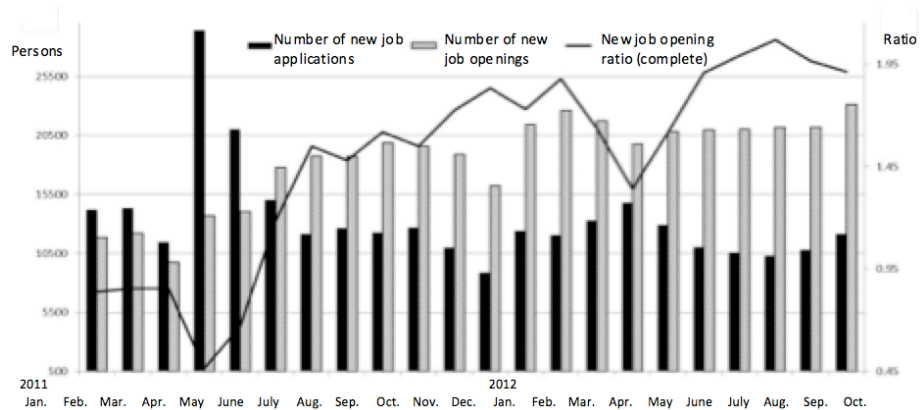
Next, trends in new job openings and new job seekers in Miyagi Prefecture will be examined. In June 2011, three months after the disaster, the number of new job seekers returned to its level just before the disaster. On the other hand, new job openings increased sharply from immediately after the

[‡] Figures for active openings, active job seekers and the jobs-to-applicants ratio are seasonally adjusted.

disaster and continued to exceed new job seekers for a while from June 2011, three months later. The difference between the two was nearly double as of October 2012.

In other words, since June 2011, three months after the disaster, the number of openings newly offered by companies seeking staff has continued to increase at a faster pace than the number of people newly looking for work.

Figure 4. Trends in new job openings and new job seekers in Miyagi Prefecture.



Source: Compiled from “Employment Referrals for General Workers in Miyagi Prefecture (as of October 2012)” published by the Miyagi Regional Labour Bureau <http://miyagi-roudoukyoku.jsite.mhlw.go.jp/library/miyagi-roudoukyoku/syokugyoushoukai/2410shokugyoushoukai.pdf> (accessed December 6, 2012).

2.3 Jobs-to-applicants Ratio by Region of Miyagi Prefecture (Coastal and Inland Areas)

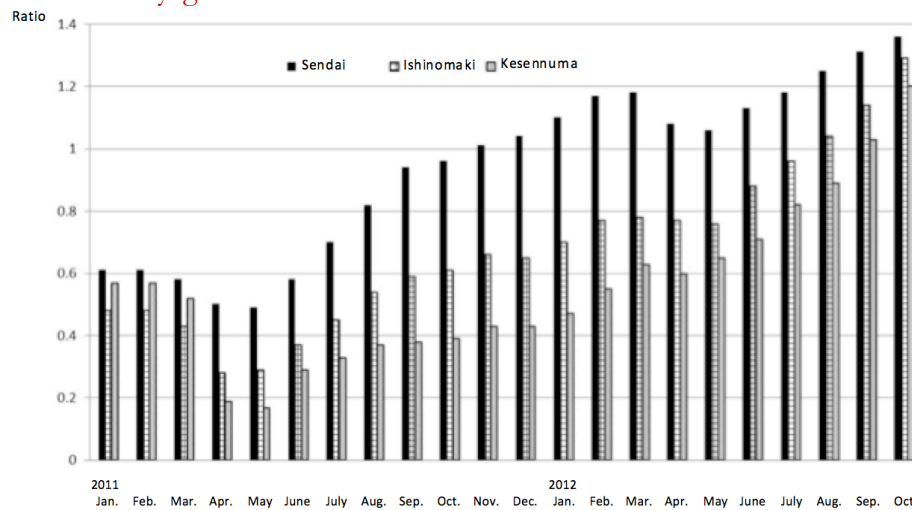
The disparity between the jobs-to-applicants ratio in Ishinomaki, Kesenuma and other coastal areas compared to Sendai and other inland areas of Miyagi Prefecture, all of which were affected by the tsunami disaster, started to widen immediately after the disaster. The difference between Sendai and Kesenuma peaked at 0.63 points in January 2012, ten months after the disaster, then gradually falling back thereafter.

In Miyagi Prefecture, the jobs-to-applicants ratio started to rise sharply in Sendai and other inland areas immediately after the disaster, leading to an ongoing labor shortage. On the other hand, in Ishinomaki and Kesenuma, however, the growth in job openings was slower than in inland areas. As a

result, for about a year after the disaster, a pronounced disparity in the jobs-to-applicants ratio arose between inland and coastal areas.

Thanks to the gradual progress of reconstruction in coastal areas, however, the ratio reached 1.29 in Ishinomaki and 1.20 in Kesennuma eighteen months after the disaster (in October 2012). This reveals severe labor shortages at local level, not just in Sendai and other inland areas but also in coastal areas like Ishinomaki and Kesennuma. This state of labor shortage is thought highly likely to delay the reconstruction of the tsunami-affected areas.

Figure 5. Trends in the Jobs-to-applicants Ratio in Coastal and Inland Areas of Miyagi Prefecture.



Source: Compiled from “Employment Referrals for General Workers in Miyagi Prefecture (as of Oct. 2012)” published by the Miyagi Regional Labour Bureau <http://miyagi-roudoukyoku.site.mhlw.go.jp/library/miyagi-roudoukyoku/syokugyoushoukai/2410.shokugyoushoukai.pdf> (accessed December 6, 2012).

2.4. Situations of Job Openings and Job Seekers in Coastal Areas Of Miyagi Prefecture, by Industry

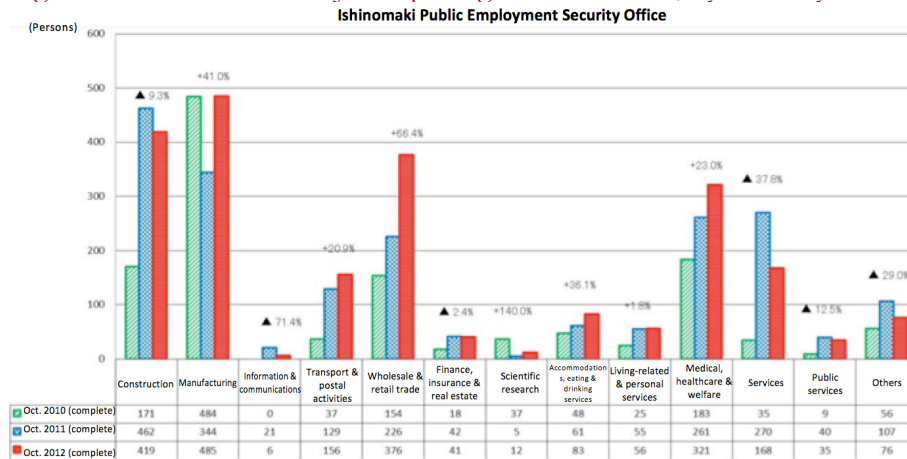
Now let us examine causes of labor shortages in Ishinomaki, Kesennuma and other coastal areas of Miyagi Prefecture.

(1) Trends in New Job Openings in Coastal Areas of Miyagi Prefecture, By Industry

The number of new job openings by industry will now be compared between three points in time, namely before the disaster in October 2010, six months after the disaster in October 2011, and eighteen months after the disaster in October 2012.

In Ishinomaki, sectors in which new job openings had increased markedly year-on-year as of six months after the disaster (October 2011), in descending order of the number of openings, were “construction”, “services”, “medical, healthcare & welfare”, “wholesale & retail trade”, and “transport & postal activities”, among others. Conversely, openings had decreased sharply in “manufacturing (including marine product processing)”. Next, sectors in which openings had increased markedly year-on-year as of eighteen months after the disaster (October 2012), in descending order, were “manufacturing (including marine product processing)” (rate of increase 41.0%), “wholesale & retail trade” (66.4%), and “medical, healthcare & welfare” (23.0%), among others. On the other hand, decreasing trends were seen in “construction” and “services”.

Figure 6. Situation of New Job Openings in Ishinomaki, by Industry[§].



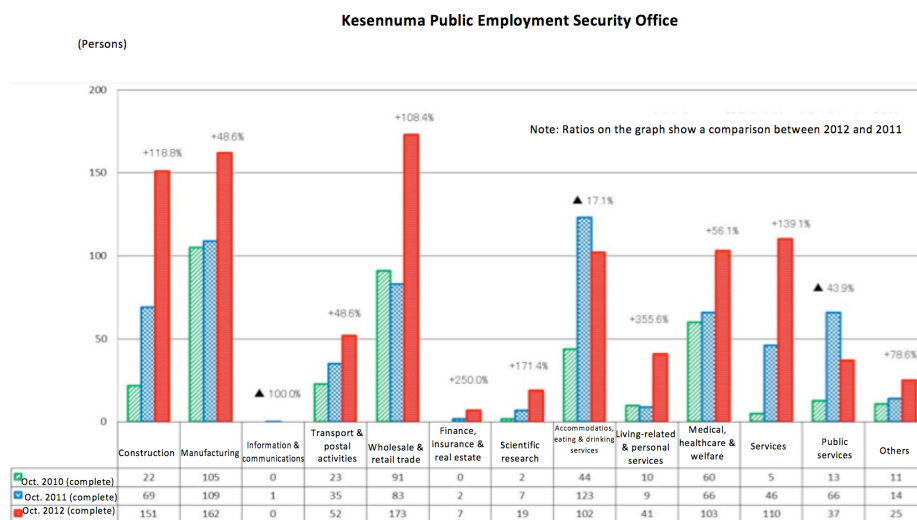
Source: Reproduced from Miyagi Regional Labour Bureau data.

[§] Ratios on the graph show a comparison between 2012 and 2011.

In Kesennuma, sectors in which new job openings had increased markedly year-on-year as of six months after the disaster (October 2011), in descending order of the number of openings, were “accommodations, eating & drinking services”, “construction”, and “public services” (e.g. temporary employment of security guards), among others. Conversely, new job openings had decreased in “wholesale & retail trade”, among others.

Next, sectors in which openings had increased markedly year-on-year as of eighteen months after the disaster (October 2012), in descending order, were “wholesale & retail trade” (rate of increase 108.4%), “manufacturing (including marine product processing” (48.6%), “construction” (118.8%), “services” (139.1%), “medical, healthcare & welfare” (56.1%), “transport and postal activities” (48.6%), and “living-related & personal services” (355.6%), among others. On the other hand, decreasing trends were seen in “accommodations, eating & drinking services” and “public services”.

Figure 7. Situation of New Job Openings in Kesennuma, by Industry.



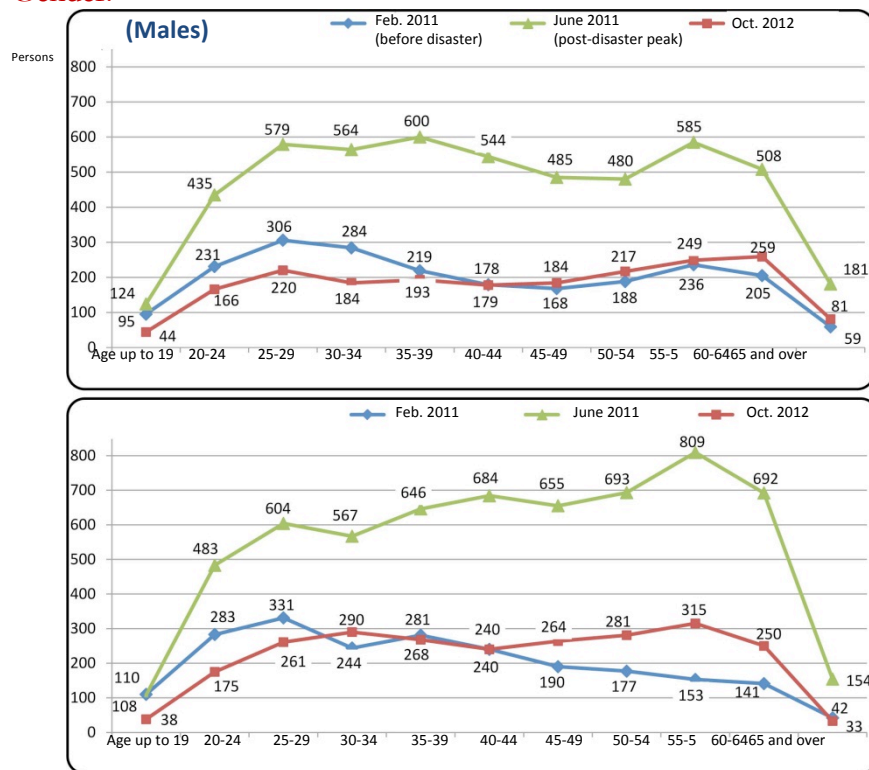
Source: Reproduced from Miyagi Regional Labour Bureau data.

(2) Trends in Numbers of Job Seekers in Coastal Areas of Miyagi Prefecture

Next, let us examine trends in numbers of job seekers in Ishinomaki, Kesennuma and other coastal areas of Miyagi Prefecture. The number of job seekers will be compared between three points in time, namely before the disaster in February 2011, three months after the disaster in June 2011, and eighteen months after the disaster in October 2012.

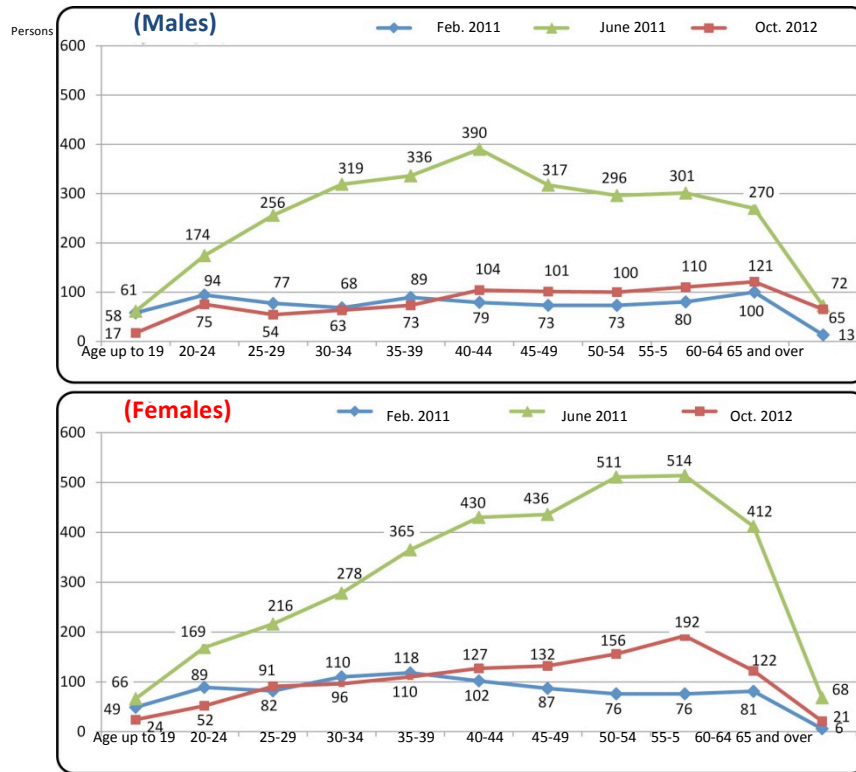
In Ishinomaki and Kesennuma, job seekers were most numerous three months after the disaster in June 2011, when females in their latter 50s accounted for the largest proportion. As of October 2012, however, numbers overall had almost returned to the situation just before the disaster. Looking more closely at the detail, we find that job seekers in younger age brackets up to the 30s were slightly fewer in number than before the disaster. In Kesennuma, particularly, the number peaked with females in their latter 50s, and job seekers among middle-aged and older females aged 40 and above remained high at 2-2.5 times the number before the disaster.

Figure 8. Trends in the Number of Job Seekers in Ishinomaki by Age and Gender.



Source: Reproduced from Miyagi Regional Labour Bureau data.

Figure 9. Trends in the Number of Job Seekers in Kesennuma by Age and Gender.



Source: Reproduced from Miyagi Regional Labour Bureau data.

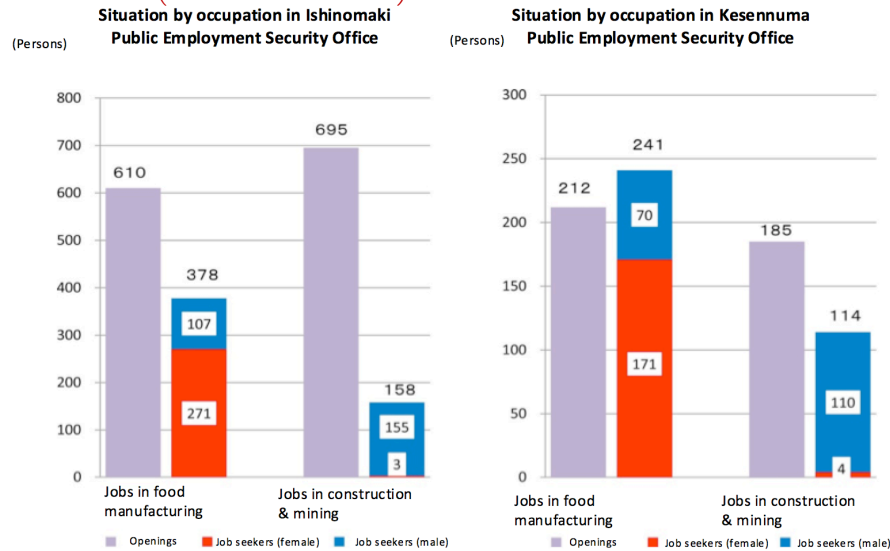
(3) Situation of Sector Mismatches by Occupation in Coastal Areas of Miyagi Prefecture

The situation of mismatches by occupation becomes apparent when we compare the numbers of openings and job seekers in sectors where openings had increased as of October 2012, namely “food manufacturing (including marine product processing)” and “construction & mining”. A characteristic in terms of gender is that females accounted for a very large proportion of job seekers wishing to work in “food manufacturing (including marine product processing)”, while the overwhelming majority of those looking for work in sectors like civil engineering and construction were male.

In Ishinomaki, the number of openings vastly outweighed the number of job seekers in both “food manufacturing (including marine product processing)” and “construction & mining”. As a result, the local labor shortage is thought to have increased in severity. In Kesennuma, conversely,

job seekers slightly outnumbered openings in food manufacturing, but in construction & mining, the number of job seekers was only about 60% of the number of openings.

Figure 10. Situation of Mismatches by Occupation in Ishinomaki and Kesennuma (as of October 2012)**.



Source: Reproduced from Miyagi Regional Labour Bureau data.

Facts clarified by the above statistical data are that, in Ishinomaki, Kesennuma and other coastal areas of Miyagi Prefecture, the number of job seekers aged below 40 had slightly decreased as of eighteen months after the disaster (in October 2012) compared to before the disaster, but that the number of openings had continued to rise markedly compared to before the disaster. This is thought to have created a situation in which it was difficult to secure human resources. However, among middle-aged and older females aged 40 and above in Kesennuma and elsewhere, the number of job seekers looking for work locally remained at a higher level than before the disaster. Meanwhile, construction-related projects supporting infrastructure reconstruction in coastal areas have suffered from chronic labor shortages since immediately after the disaster. Furthermore, the reconstruction of marine product processing & other food manufacturing (the principal industry in coastal areas) has caused a sharp increase in new job openings.

** Jobs in construction & mining are jobs in construction, electrical works, civil engineering, etc.

This has given rise to severe problems of labor shortage in Ishinomaki and elsewhere, and this is highly likely to be hindering the reconstruction of local industry.

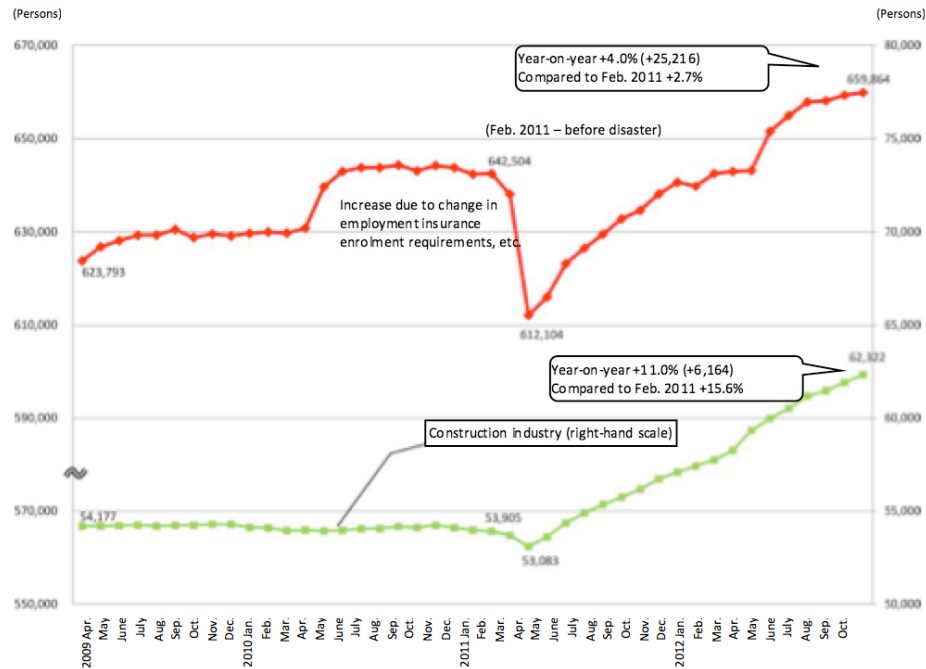
2.5. Changes in the Employment Structure of Miyagi Prefecture

Now let us examine how the employment structure in Miyagi Prefecture has changed. We can see the changes in the employment structure by analyzing data on workers enrolled in employment insurance (except the self-employed, business owners and others in agriculture, forestry, fisheries, commercial business, etc.).

In Miyagi Prefecture as a whole, there were more workers enrolled in employment insurance about one year after the disaster in Feb. 2012 than there had been before the disaster. As of October, moreover, these had increased by 17,360 individuals compared to just before the disaster in Feb. 2011. In a breakdown of this increase by sector, construction accounted for 8,417 individuals (48%).

In other words, this means that in Miyagi Prefecture as a whole, about half of the increase in employment after the disaster consisted of workers engaged in construction-related jobs.

Figure 11. Trends in Workers Enrolled in Employment Insurance in Miyagi Prefecture as a whole and in Construction.



Source: Reproduced from Miyagi Regional Labour Bureau data.

Comparing the number of workers enrolled in employment insurance just before the disaster (February 2011) and eighteen months after the disaster (October 2012), the largest increases besides “construction” (8,417) were in “services” (6,766) and “medical, healthcare & welfare” (6,576). Conversely, a decrease of 7,867 was seen in “manufacturing (including food manufacturing)”.

In other words, the sector seeing the largest increase in employees in Miyagi Prefecture since the disaster is construction, followed by services, medical, healthcare & welfare and others, showing significant increases. On the other hand, workers in manufacturing industries have decreased markedly.

Figure 12. Change in Number of Workers Enrolled in Employment Insurance in Miyagi Prefecture, by Industry (comparison between Feb. 2011 and Oct. 2012).



Source: Reproduced from Miyagi Regional Labour Bureau data.

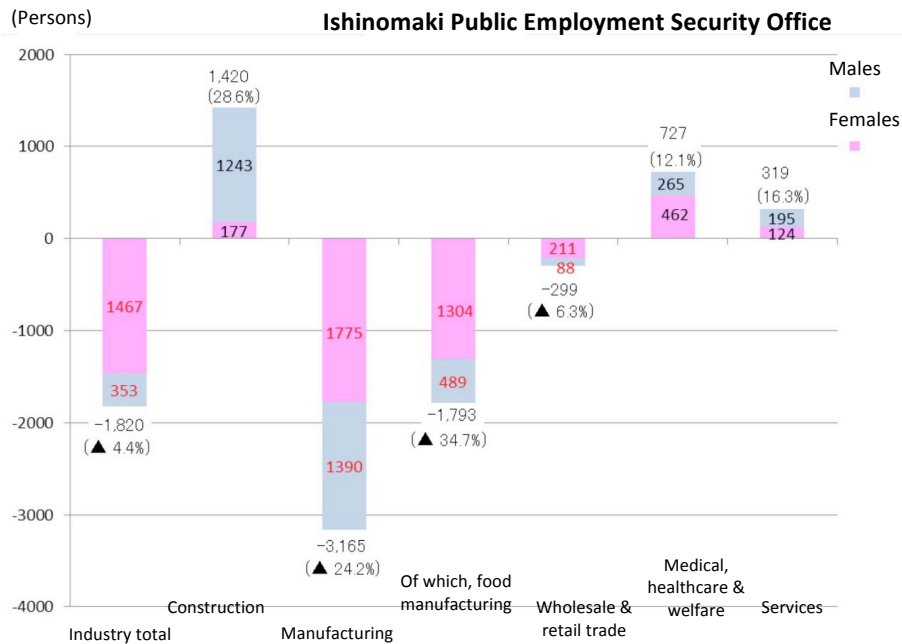
Now, let us examine in more detail trends in the number of workers enrolled in employment insurance in Ishinomaki, Kesenuma and other coastal areas.

(1) Change in Number of Workers enrolled in Employment Insurance in Ishinomaki, by Industry

In Ishinomaki, the decrease in number of workers enrolled in employment insurance as of eighteen months after the disaster (October 2012) was a total of 1,820 compared to just before the disaster (February 2011). In particular, the number decreased by 1,793 in marine product processing & other food manufacturing, and by 3,165 in manufacturing as a whole (including shipbuilding and others), while the number increased by 1,420 in construction, 727 in medical, healthcare & welfare, and 319 in services.

This indicates that workers engaged in construction, medical, healthcare & welfare and other sectors increased in Ishinomaki, but because workers in manufacturing industries such as marine product processing & other food manufacturing decreased more markedly, the total number of persons in employment has fallen by at least 1,820.

Figure 13. Change in Number of Workers Enrolled in Employment Insurance in Ishinomaki, by Industry (comparison between February 2011 and October 2012).



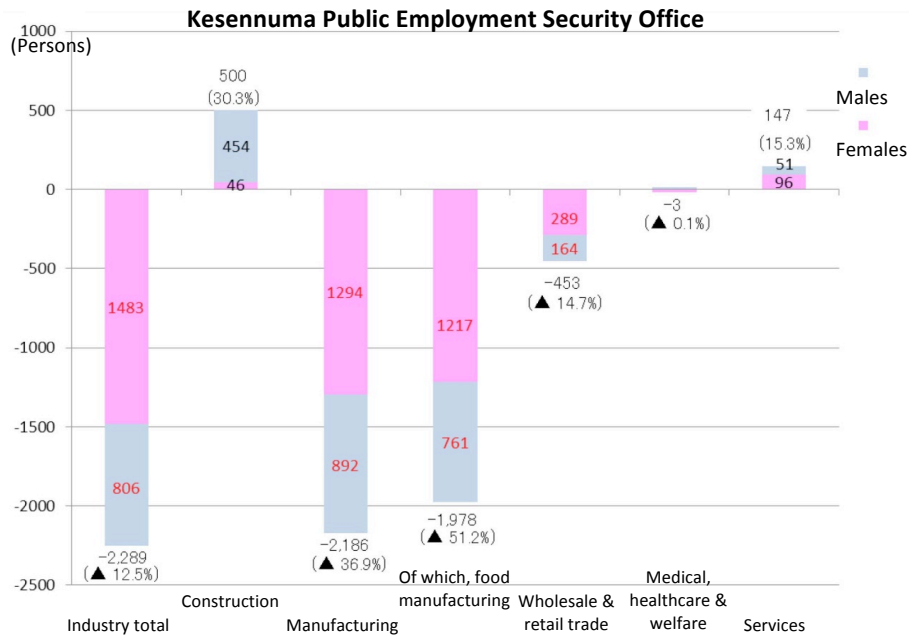
Source: Reproduced from Miyagi Regional Labour Bureau data.

(2) Change in Number of Workers Enrolled in Employment Insurance in Kesenuma, by Industry

In Kesenuma as a whole, there were 2,289 fewer workers enrolled in employment insurance as of eighteen months after the disaster (October 2012) than just before the disaster (February 2011). In particular, the number working in marine product processing & other food manufacturing decreased by as many as 1,978, accounting for 86% of the overall decrease in Kesenuma, while the number only increased by 500 in construction and 147 in services.

This indicates that workers in construction and other sectors also increased in Kesenuma, but the decrease in the number of workers in manufacturing industries such as marine product processing & other food manufacturing exceeded the above increase, the total number of persons in employment has fallen by at least 2,289.

Figure 14. Change in Number of Workers Enrolled in Employment Insurance in Kesennuma, by Industry (comparison between February 2011 and October 2012).



Source: Reproduced from Miyagi Regional Labour Bureau data.

Facts clarified by the above statistical data are that, in Miyagi Prefecture as a whole, the number of people engaged in construction-related jobs increased significantly, but that in Ishinomaki, Kesennuma and other coastal areas affected by the tsunami, the number of persons employed in the principal industry of marine product processing & other food manufacturing decreased significantly compared to before the disaster.

Cross-checking with previous analysis results reveals that, in Miyagi Prefecture as a whole (including Ishinomaki, Kesennuma and other coastal areas), there was an ongoing labor shortage caused by an unprecedented loss of manpower as of October 2012. Some workers who lost their jobs but remained in Ishinomaki, Kesennuma and other coastal areas have been re-employed in construction-related industries (mainly males), but middle-aged and older females aged 40 and over are finding it as difficult as ever to find work. Even though more companies are gradually rebuilding marine product processing and other food manufacturing business, the principal industry of coastal areas, and the number of openings has increased, the number of job seekers at local level has decreased.

The main conceivable causes of this are thought to be, firstly, that some unemployed workers aged below 40 moved away from coastal areas after the disaster, and secondly, that many elderly workers who remained in their local areas even after the disaster gave up hope of re-employment after the extension of unemployment benefits had ended.

In Kesenuma and elsewhere, there are reports that middle-aged and older female employees previously employed by local marine product processing companies, on losing their jobs when their companies were affected by the disaster, were often reluctant to work for other companies out of consideration for close-knit human relations in their locality. Others suggest that young people tend to shun many marine product processing jobs that generally involve slicing fish and other seafood, because the wages are too low and the working environment is poor, due to the smell, etc. These circumstances are also thought to make it more difficult to hire the human resources needed to reconstruct marine product processing & other food manufacturing.

Whatever the case, the number of persons employed in services, medical, healthcare and welfare and other sectors is increasing in Miyagi Prefecture, led by construction due to temporary reconstruction demand. However, persons employed in the principal industry of marine product processing & other food manufacturing in Ishinomaki, Kesenuma and other coastal areas were still 34.7% fewer in Ishinomaki and 51.2% in Kesenuma as of October 2012, even eighteen months after the disaster, compared to just before the disaster (February 2011). In other words, although employment opportunities expanded quantitatively thanks to temporary construction-related demand, there has been no change in the structural problem of “shrinking employment opportunities” that had faced the region since before the disaster. This seems to have exacerbated the situation in coastal areas.

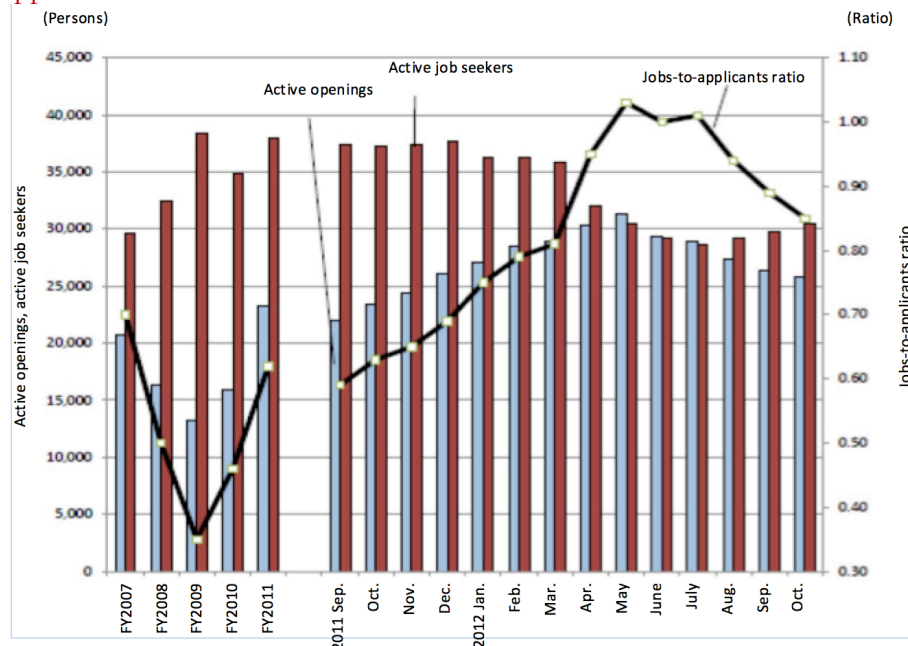
3. The Employment Situation in Iwate Prefecture

3.1. Trends in Active Openings and Active Job Seekers in Iwate Prefecture

In Iwate Prefecture, the jobs-to-applicants ratio started to grow steadily immediately after the disaster, peaking at more than 1.0 fourteen months later in May 2012, before suddenly falling to 0.85 as of October 2012. This was because, although the number of active openings had been tending to

decrease at a constant rate since May 2012, the number of active job seekers turned to an increase from around August 2012.

Figure 15. Trends in Active Openings, Active Job seekers and the Jobs-to-applicants Ratio in Iwate Prefecture.



Source: Iwate Regional Labour Bureau website <http://iwate-roudoukyoku.site.mhlw.go.jp/var/rev0/0068/0986/2010ippan.pdf> (accessed December 21, 2012).

3.2. Disparity in the Jobs-to-applicants Ratio by Region of Iwate Prefecture (Coastal and Inland Areas)

Trends in the jobs-to-applicants ratio in two parts of Iwate Prefecture – Kamaishi, in a coastal area damaged by the tsunami, and Kitakami, in an inland area with an industrial zone including a strong base in auto manufacturing – will now be compared.

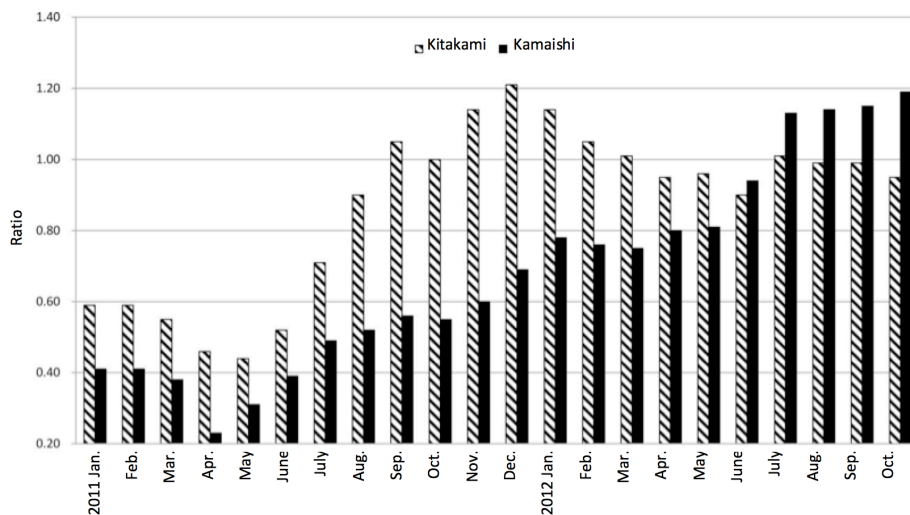
In inland Kitakami, the ratio fell for a short while immediately after the disaster, but quickly recovered to peak at more than 1.2 nine months later in December 2011. It then turned to a gradual decline, standing at 0.95 as of October 2012.

In coastal Kamaishi, by contrast, the ratio slumped sharply immediately after the disaster, but gradually grew thereafter, passing 1.0 sixteen months after the disaster in July 2012. Even as of October 2012, the ratio stood at 1.19,

revealing an ongoing labor shortage. Incidentally, the region of Iwate Prefecture with the highest jobs-to-applicants ratio as of October 2012 was Ofunato (1.30). This suggests a severe labor shortage in coastal areas of Iwate Prefecture, particularly in construction.

In other words, in inland areas that escaped direct damage from the disaster, the jobs-to-applicants ratio rose sharply from immediately after the disaster, passed 1.0 six months after the disaster to signal a labor shortage, and gradually decreased thereafter. As of October 2012, however, there was no great change in the situation. In tsunami-affected coastal areas like Kamaishi, conversely, reconstruction demand finally started in earnest nearly a year after the disaster, and there is an ongoing state of labor shortage.

Figure 16. Trends in the Active Opening Ratio in a Coastal Area (Kamaishi) and an Inland Area (Kitakami) of Iwate Prefecture.



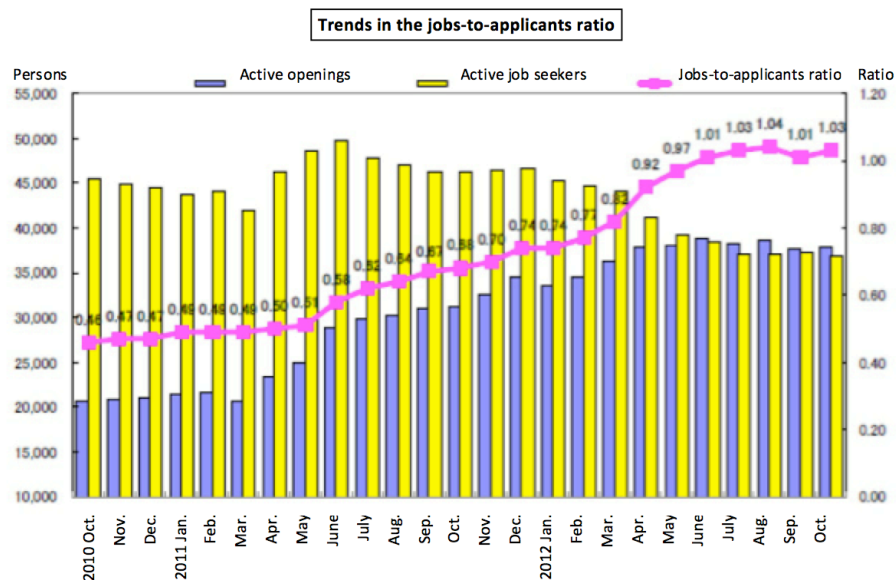
Source: Compiled from data on the Iwate Regional Labour Bureau website <http://iwate-roundoukyoku.jsite.mhlw.go.jp/var/rev0/0068/0986/2010ippan.pdf> (accessed December 21, 2012).

4. The Employment Situation in Fukushima Prefecture

4.1. Trends in Active Openings and Active Job Seekers in Fukushima Prefecture

In Fukushima Prefecture, the jobs-to-applicants ratio was 0.49 just before the disaster in February 2011, but active openings gradually increased in number from immediately after the disaster. As a result, active openings outnumbered active job seekers fifteen months later in June 2012, and a situation of labor shortage was ongoing as of October 2012.

Figure 17. Trends in Active Openings, Active Job Seekers and the Jobs-to-applicants Ratio in Fukushima Prefecture.



Monthly figures are seasonally adjusted.

Source: Fukushima Regional Labour Bureau website <http://fukushima-roudoukyoku.jsite.mhlw.go.jp/var/rev0/0068/1350/20121130102122.pdf> (accessed December 21, 2012).

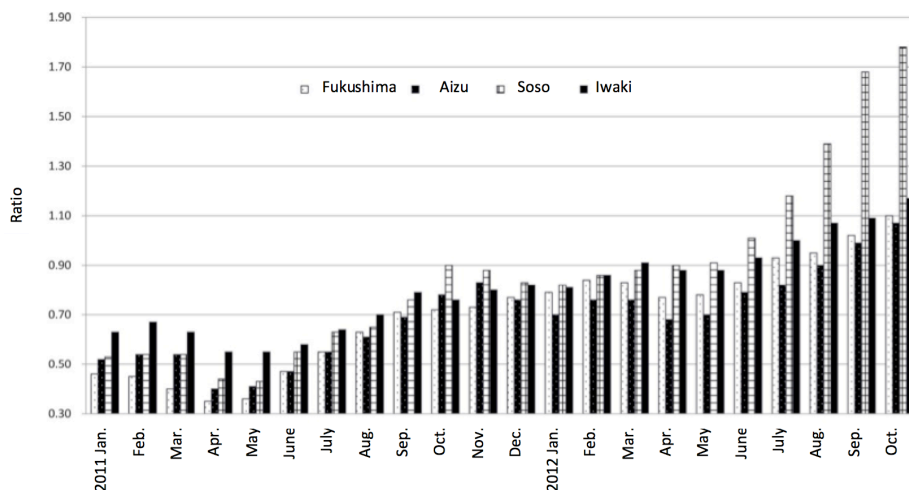
4.2. Disparity in the Jobs-to-applicants Ratio by Region of Fukushima Prefecture (Outskirts of Nuclear Evacuation Zone, and Other Areas)

Trends in the jobs-to-applicants ratio in two parts of Fukushima Prefecture – “Soso” (the two towns of Soma and Futaba adjacent to the nuclear evacuation zone) and areas other than this – will now be examined.

The ratio started to increase gradually immediately after the disaster, remaining high at between 0.8 and 0.9 in Soso and Iwaki from around six months later in October 2011. However, fifteen months later in around June 2012, the jobs-to-applicants ratio started to grow rapidly in all areas. The jobs-to-applicants ratio rose particularly quickly in Soso, reaching nearly 1.8 as of October 2012.

In other words, the employment situation gradually improved up to about six months after the disaster, and did not change greatly thereafter, but because the reconstruction started in earnest fifteen months later in around June 2012, labor shortages became more acute in all areas. In particular, the jobs-to-applicants ratio in Soso as of October 2012 was by far the highest in all six prefectures of Tohoku (1.78), showing that the labor shortage was most severe.

Figure 18. Trends in the Jobs-to-applicants Ratio on the Outskirts of the Nuclear Evacuation Zone and in Other Areas of Fukushima Prefecture.



Source: Compiled from the Fukushima Regional Labour Bureau website <http://fukushima-roudoukyoku.site.mhlw.go.jp/var/rev0/0068/1350/20121130102122.pdf> (accessed December 21, 2012).

Despite the revision of the evacuation zone and the start of full-scale decontamination of radiation in Fukushima Prefecture, many people still evacuated outside the prefecture (particularly those in younger age groups), and the number of active job seekers has decreased. As in Miyagi Prefecture, however, job openings are brisk in the construction sector as well as in

wholesale & retail trade, medical, healthcare & welfare and others. As a result, local companies are unable to secure sufficient human resources and labor shortages are increasing in severity. These problems with employment are thought highly likely to delay the reconstruction effort in Fukushima Prefecture.

Acknowledgement

The author would like to take this opportunity to thank the Miyagi Regional Labour Bureau most sincerely for providing detailed analytical data for the analysis of statistical data on employment from Miyagi Prefecture.

The Impact of Disasters on Independent Contractors: Victims of Circumstances

Felicity Lamm, Nadine McDonnell and Ryan Lamare

1. Introduction

The year 2010-2011 will be known in New Zealand as *annus horribilis*. Within a period of five months New Zealand had not only experienced a major mining disaster but also two major earthquakes. All three disasters were located in the South Island of New Zealand. While remarkably in the first earthquake no one was killed, the second 6.3 magnitude earthquake centred in Canterbury's largest city Christchurch killed 185 people in February 2011. Three months earlier on the November 19 2010 a series of methane explosions at the Pike River Coal Mine (PRCM), situated outside the small regional West Coast town of Greymouth, killed 29 workers. Thirteen of the dead were contracted workers. At the time of the Pike River Coal Mine explosion, out of a workforce of 200, over 80 independent contractors were employed at the mine. Most of the independent contractors operated local, small businesses, employing on average 10 people. Pike River Coal Mine Ltd not only subcontracted manual labour (skilled and unskilled) but the company also outsourced aspects of the mine design, financial and environmental risk assessments, and a great deal of the management of occupational health and safety (OHS), such as mine ventilation.

Shortly after the explosions at PRCM, the mine was closed and the company went into receivership. As most of the independent contractors were unsecured small creditors, neither they nor their workers nor their families received any money owed to them by Pike River Coal Mine Ltd

Centre for Occupational Health and Safety Research, AUT.

(in receivership). It is estimated that unsecured creditors, including the independent contractors, are owed NZ\$31m, with another \$20.5m owed to Pike's major shareholder and secured creditor, New Zealand Oil and Gas. Unlike the full-time employees who are afforded some protection under New Zealand's employment law and ongoing employment from their organisation, these precariously employed independent contractors have been at the sharp-end of vulnerability since the aftermath of the PRCM disaster. In addition, the PRCM case demonstrates that independent contractors not only lost their lives and workmates but also have become *de facto*, often vulnerable employees without tenured work or cover by many of the protective employment regulations. The PRCM Disaster, therefore, is a useful case study and the starting point for an ongoing study in the area of the impact of disasters on vulnerable workers as it illustrates the fact that disasters can have immediate and long-term economic and social effects on independent contractors and their families. Underpinning the PRCM case study is the realisation that there has been an exponential growth in outsourced work to independent contractors while at the same time there has been a parallel rise in workers employed in insecure work, including contracting work. It is estimated, for example, that 30 per cent of workers in New Zealand and 40 per cent of workers in Australia are employed in insecure work¹. Central to this increased use of independent contractors is the recognition that organisations are now constructed in such a way that the so-called peripheral labour constitutes a significant proportion of the workforce in contrast to the core workforce. While this relationship may suit both the principal organisation and its independent contracting workforce in times of certainty, the PRCM disaster shows that this relationship can rapidly turn toxic in catastrophic times, affecting more than just the independent contractors and their workforce but also the wider community.

However, before we proceed to examine the PRCM disaster in detail, we revisit the debates concerning the differences between "an independent contractor" *versus* "an employee" with the aim of shifting the focus from the employee and employment to the idea of working and the organisation of this work. While we acknowledge that debates on how "independent contractors" are defined have been "interminable"², the question still remains: what is "an employee" and more importantly what is "an independent contractor"? Furthermore, in this paper, our focus is

¹ NZ Council of Trade Unions (NZCTU), 2013.

² Standing, 2011: 679.

on “independent contactors” as single individuals who may or may not have a contractual relationship with others as employees or other dependent or independent contractors.

2. The Employee versus the Independent Contractor

The post-war standard form of employment began to deteriorate in many of the OECD countries from the late 1980s onwards as a growing number of workers started to enter the labour market. Increasing globalisation, mounting competitive pressures, and the growth of the service industries also created the need for greater labour flexibility, further threatening the standard employment and the employment relationship. Moreover, the prevalence of reclassifying a “full-time, permanent employee” to “an independent contractor” or “casualised employee” has been a major feature of these changes and has significantly altered the employment relationship as the former status is often linked to employment benefits and entitlements not afforded to the latter³.

In New Zealand and elsewhere, there is a key legal distinction between *contract of services* (i.e. hiring an employee) and *contract for services* (i.e. hiring an independent or self-employed contractor) (see Table 1). On one hand, *contract of service* or employment contracts cover employees working for wages or salaries typically in standard work. The employee, like the pre-Industrial Revolution servant, is typically a subordinate charged with execution rather than conception of the job. *Contracts for services* cover self-employed contractors, such as tradespeople, taxi drivers, and many professionals (i.e. lawyers and doctors, etc.) who work for others under contract to provide distinct jobs or services. The *contract of services* is pursuant under employment law while *contract for services* is mainly pursuant under commercial law. Thus while in practice the independent contractor may do the same tasks as an employee in law they are different.

While the traditional view of the *employee* is as integral part of the enterprise, this does not explain the independence enjoyed by the contractor. The independent contractor is “independent” of the firm including the corporate structure in the sense that they are not bound to the job through economic necessity. Their work may be integrated into the firm, *but they are not*. At the same time their economic independence is limited in that the contract price is determined by supply and demand of

³ refer to Donahue, Lamare & Kotler, 2007.

the market. In theory, the employer seeks to integrate workers into the firm as employees if the costs of the independent contractor are greater than the costs of hiring an employee. The decision to hire employees or to contract workers *independently* is a management prerogative made on the basis of the organisational or corporate interests and not the interests of the worker. And the greatest interest is in reducing costs, that is, the financial interests of the firm determine whether workers are hired as employees or as independent contractors. Here the term “vertical integration” can be seen as reflecting the line of command within large firms: as within the military, the management structure of corporate firms is a pyramid and all workers needed for production are placed within this hierarchy. Only those workers with particular skills (or professional standing such as lawyers) traditionally remain outside the firm hierarchy as independent contractors.

In many respects, employment law was developed by governments to protect workers who toiled at the lower and less powerful levels of this hierarchy. And by hiring independent contractors the employer could reduce compliance costs imposed by employment law. However, the contractor, (as opposed to the employee), is viewed at law as an equal to the other contracting party and the contract is interpreted and enforced by the courts as written. The independent contractor was not, at law, seen as in need of the protections offered by employment law. The legal definition of a contractor is as a worker pursuant to a “contract for service” in contrast to an employee who has a “contract of service” is outlined in the table below.

Table 1. Contract Of and For Services.

	Contract OF Services	Contract FOR Services
Control & management	Employer has the right to control & manage work	Contractor controls & manages work
Integration	Employee is part of the principal organisation	Contractor is independent of the principal organisation
Hours of work	Set by employer	Contractors' hours are determined by contract
Tools & equipment	Provided by employer	Provided by contractor
Form of Payment	Wages paid by employer on regular basis	Contract price paid by principal contractor as agreed
Profit & Loss	Borne by employer	Borne by the contractor
Payment of tax, workers' compensation, etc.	Employer's responsibility	Contractor's responsibility
Service	Employee serves the employer	Contractor serves the client

Source: Authors' Own Elaboration.

The *independent contractor*, as the word suggests, has a contract – an agreement – with the hiring party (denoted in New Zealand law as “the principle”). The contract is interpreted and enforced by the courts even if it is a contract for the provision of labour. The contractor, (as opposed to the employee), is viewed at law as an equal to the other contracting party and the contract is interpreted and enforced by the courts as written. The legal definition of a contractor is a worker pursuant to a “contract for service”, in contrast to an employee who has a “contract of service”. The contractor’s contract is, at times, referred to as a commercial contract as it is interpreted in much the same way as other contracts, such as those applying to the sale and purchase of goods. Although there are laws that apply to commercial contracts, such as rules for the sale of goods and other rules regulating businesses (e.g., rules on restraint of trade), *the contract defines the relationship*.

In New Zealand independent contractors are not entitled to receive the

so-called “minimum code” statutory protections, such as holidays and other types of paid leave, minimum wages, or equal pay. Certain implied terms that are present in every New Zealand employment agreement by statute or common law are not present in ordinary contracts. The obligation of good faith under Section 4 of the Employment Relations Act 2000, for example, requires the parties to be open and communicative and not to do anything likely to mislead or deceive one another⁴. Nonetheless, independent contractors retain some rights (although they are excluded from others), including the right to a healthy workplace, some parental leave rights, and rights under the Fair Trading Act 1986 against misleading and deceptive conduct. They also retain rights and protections under general contract law. These rights, however, are the poor substitutes compared to the detailed law built up to protect employees from what the Employment Relations Act 2000 calls “the inherent inequality of bargaining power in employment relationships⁵”. Independent contractors can also have their contracts terminated in accordance with the terms of the contract without the terminating party being subject to a requirement of justification⁶. Contractors will not have access to the low-level, low- or no-cost dispute resolution services provided under the employment framework such as the Mediation Service and Employment Relations Authority.

3. Vulnerability as an Independent Contractor

Not only has it become more difficult to distinguish between “an employee” and “an independent contractor”, but the blurring of these terms is also part of wider discourses on outsourcing and the shift from secure to insecure work – important features that are rarely included in the disaster literature. The experience of an increasing number of workers employed in the structured networks of production and services is the “downsizing” of large organisations and “outsourcing” of their work,

⁴ NZCTU, 2013. Unlike other systems of law, New Zealand does not impose a general duty on parties to deal with each other fairly and in good faith (good faith in this general sense should not be confused with the statutory duty of good faith set out in the Employment Relations Act 2000 though it is a subset of that wider duty). See Burrows, Finn and Todd (2007) at [2.2.6] and [6.3].

⁵ Such as those provided by the Contractual Mistakes Act 1977 and the Contractual Remedies Act 1979.

⁶ Section 3(a)(ii) of the Employment Relations Act 2000.

which in turn has resulted in a growing pattern of displacement of more stable contracts of employment in large organisations⁷.

As a result of these structural changes to production and services, there has been a proliferation of small independent contractors reliant for their income on outsourced work from a larger business or businesses⁸. For many independent contractors the reality is that they are in fact *dependent* contractors. This is particularly so for self-employed people dependent on a single client and who often have little control over their work and have few (if any) rights over their pay and conditions. Studies on the wages and conditions of dependent contractors indicate that their working conditions and pay are often exploitative, compared to contractors who are not reliant on one client⁹. Mayhew and Quinlan (1997) also argue that the effects of subcontracting and outsourcing on independent contractors will in certain instances lower OHS standards of independent contractors and their employees because of: (a) employment status is fluid or ambiguous; (b) the nature of skill/work involved; and (c) remuneration is based on output.

Studies indicate that an increasing number of workers are being coerced into contracting situations, typically by their employer, resulting in the loss of significant remuneration and any semblance of job security while assuming significant additional safety and financial risks¹⁰. Related to this is the practice of reclassification or misclassification of employees as independent contractors whereby the act of outsourcing places at once both the task and the employer's duty of care outside the domain of the firm, thus further undermining the protective legal framework for employees¹¹. Donahue, Lamare and Kotler¹², argue though that misclassification of employees as independent contractors occurs for different reasons. Responsible employers may misclassify workers because they are unclear or confused about how to apply complex, inconsistent, and varying standards. Other employers intentionally misclassify workers, assuming the risk of incurring penalties, as a strategy to significantly cut labour costs, limit their liability, and gain an unfair competitive advantage. Notwithstanding the different reasons for the misclassification, the authors state that the impact of the practice can have severe implications

⁷ Lamm & Walters, 2004.

⁸ Blyton & Turnbull, 1994; Quinlan, et al., 2010.

⁹ Caritas, 2007.

¹⁰ Lamm, 2002; NZCTU, 2013.

¹¹ Lamm, 2002; Donahue, Lamare and Kotler, (2007:2).

¹² *Ibid.*

for workers in that it denies many workers protections and benefits that they are entitled to. Moreover, worker misclassification disrupts labour markets by enabling unscrupulous employers to ignore labour standards. Thus, these so-called independent contractors are for all intents and purposes *de facto*, dependent employees in which the remuneration and working conditions are often poor.

There is also a substantial body of evidence showing that the effects of insecure work are pervasive and overwhelmingly negative¹³. Like outsourcing, insecure work is at the centre of reframing full-time, permanent work into precarious employment such as temporary, seasonal, casual, labour hire (agency), and fixed-term employment¹⁴. And yet both forms of work are increasingly being adopted for cost-cutting reasons and shifting the risk from the principal employer to the independent, sub-contractor¹⁵.

A great deal of the empirical work and conceptualisation on insecure work and outsourcing has in fact had OHS factors of vulnerability as a focal point¹⁶. In particular, studies have begun to establish a link between work-related injuries and illnesses suffered by vulnerable workers and interconnected social, economic, legal, and political factors. For example, in the 2007 World Health Organization's Employment Conditions Knowledge Network (EMCONET) report *Employment Conditions and Health Inequalities*, a number of factors were highlighted explaining the disparities in working conditions among vulnerable workers. These include employment status, conditions of recruitment, sector of employment or occupation, employment in the informal sector, lack of freedom of association, and collective bargaining rights. Another example of using OHS factors to measure and describe vulnerability among groups of workers is the "Pressures, Disorganization and Regulatory Failure" (PDR) model developed by Quinlan and Bohle (2004, 2009), which helps to explain the poor OHS outcomes of precariously employed workers. The model is useful in that it organises a number of factors that have a negative impact on the OHS of precarious workers into three categories: economic and reward pressures; disorganisation at the workplace; and

¹³ Dorman, 2000; Quinlan and Mayhew, 2001; Tucker, 2002; Bohle, et al, 2004; Connelly and Gallagher, 2004; McLaren, et al, 2004 Burgess, et al, 2008; Lewchuk, et al, 2008; Seixas et al, 2008; Kalleberg, 2009; Reisel, et al 2010; Probst and Ekore, 2010.

¹⁴ Connelly and Gallagher, 2004; Vosko, 2008; Boocock, et al, 2011; Quinlan, 2012.

¹⁵ Kalleberg, 2009 also see Johnstone, Mayhew and Quinlan, 2005:351-2.

¹⁶ see Quinlan and Mayhew, 1999; 2000; Tucker, 2002; Quinlan and Bohle, 2004, 2009; Hannif and Lamm, 2005; Sargeant and Tucker, 2009; Gravel, et al, 2013.

regulatory failure¹⁷.

4. Disasters and Independent Contractors

It is clear, therefore, that an independent contracting workforce can, in certain situations, be vulnerable in terms of their pay, conditions, health and safety, and tenure. What is not clear, however, is the impact of disasters, such as PRCM explosions, on this group of workers. The dominant paradigm in the disaster literature is one of coping during and after the disaster and rebuilding post-disaster. Here independent contractors are viewed as part of the solution rather than victims of circumstances. However, no one has asked the question: what is the impact of disasters on vulnerable independent contractors? Given that this question has yet to be fully addressed in the literature, perhaps more orthodox disaster research, such as Quarantelli's (1985; 1999) work on the psychosocial aftermath of disasters, can shed some light in this area.

Quarantelli's (1985:14) research is useful for our discussion in that it outlines the psychosocial effects of disasters on small regional communities (i.e. Greymouth). In particular, he notes that there are two opposing views. One position holds that disasters are traumatic life events, producing "[...] very pervasive, deeply internalized, and essentially negative psychological effects. Disaster victims are viewed primarily as attempting to cope with the meaning of the trauma and disaster impact." The second position holds "[...] that community disasters have differential rather than across-the-board effects. Some of the effects are positive as well as negative; many of the latter are relatively short in duration. The varying problems of victims are more closely related to the post-impact organized response than they are to the disaster impact itself". Quarantelli's review indicates that the matter may never be decided because no two disasters are completely similar as to their conditions or to the manner in which they are researched.

More recently attention has been on the impact of work-related injuries and illness and, in particular, traumatic work-related death, on the victims' families¹⁸ argue:

[...] serious illness, injury, or death at work [...] has cascading psychological,

¹⁷ Quinlan and Bohle, 2009.

¹⁸ see Matthews, Bohle, Quinlan, and Rawlings-Way, 2011 and. Matthews, Quinlan, Rawlings-Way and Bohle, 2012. As Matthews, et al (2012:647; 663.

social, and economic effects on victims' families and close friends. These effects have been neglected by researchers and policymakers. The number of persons immediately affected by workplace death is significant, even in rich countries with relatively low rates of workplace fatality [...] [However], how employers, unions and government agencies deal with families following a workplace death is... poorly understood.

In particular, they note that:

The wider bereavement literature indicates that exposure to sudden, traumatic death can leave people vulnerable to adverse mental and physical health outcomes such as depression, posttraumatic stress, complicated grief and cancer [...] These conditions may result in reduced ability to work, both in the short and longer term and lead to poor quality of life for partners and children [...] Children and adolescents exposed to traumatic death are particularly vulnerable to lasting behavioural, emotional and cognitive consequences that may become severely disabling.

In short, Matthews et al, (2012: 663) conclude that a traumatic work-related death, punctuated by financial and health problems, can dramatically change family relationships, recalibrate family roles and structure, and disrupted friendships.

New Zealand research also suggests that an injury to the owner or a key staff member can have a significant impact on the viability of a small business, including an independent contracting business. Based on workers' compensation claims, it has been estimated that 1,800+ New Zealand businesses ceased to operate in the year 2002-2003 as a result of an injury to the owner or an employee¹⁹. In a later survey undertaken on behalf of New Zealand's Accident Compensation Corporation in 2006, it was revealed that 58 per cent of the respondents stated that the closure of the small business was a direct result of either the owner or employee being injured while 19 per cent said that an injury to a member of the business was to some extent responsible for the business closure²⁰. When those respondents who had been injured were asked if they were likely to work in the future 56 per cent said no while 8 per cent were not sure.

Previous research on the impact of disasters on individuals, businesses, and communities provides a number of insights that in turn can be applied to the PRCM case study below. While there is yet no complete data analysis on the social consequences and economic costs of the

¹⁹ Statistics New Zealand (2003) estimate that the small business population in 2002-2003 was 394,471.

²⁰ Johnson, 2006.

PRCM disaster on the local community, we can speculate that such a disaster will affect Greymouth and the surrounding district. Many of Greymouth's working population of approximately 1,427 small businesses, employing approximately 7,000 employees, support the local mining industry. Workers in Grey District are 57 times more likely to be employed in coal mining than they are in the rest of the country. Therefore, the closure of the PRCM (and other subsequent mine closures, including Spring Creek Coal Mine) have had a detrimental impact on the level of unemployment and the local economy²¹. The Grey District is not only highly dependent on the mining or extraction industry but is also dependent on tourism, which has already been disrupted by the influx of specialists to help with the rescue and recovery mission as well as media²².

5. Case Study: Pike River Coal Mine Ltd

On 19 November 2010 at 15.45 hours the first of four explosions at Pike River Coal Mine occurred. Of the 31 men underground only two survived. It is believed that 29 men lost their lives as a result of the first explosion. Chance played a big part in which men and how many remained underground at 3:45pm. Confusion as to how many miners and who were trapped underground days after the explosion together with a lack of a coherent rescue strategy and an inexperienced incident team were to undermine any hope of retrieving the miners dead or alive.

Since the disaster, there have been several inquiries, including a Royal Commission of Inquiry, an internal governmental inquiry and three court cases, two of which have concluded with prosecutions against the company and one of the main sub-contractors. The third court case against the Chief Executive Officer, Peter Whittall, has yet to be convened. In the most recent court case, Pike River Coal Mine Ltd (in receivership) was charged with failing to take all practicable steps to prevent harm to its employees. Judge Jane Farish ordered Pike River Coal Mine Ltd to pay a total of \$3.41 million in reparation - \$110,000 for each of the victim's families and survivors Russell Smith and Daniel Rockhouse. She also fined the company a total of \$760,000 over nine charges. The receivers of Pike River Coal Mine Ltd stated that it had only enough money to pay \$5000 to each family. Judge Farish argued that:

²¹ Grey District, 2013.

²² Wood, 2011.

“Even a company in a fragile state usually comes forward and offers reparation, but here nothing has been forthcoming.”

Prompted by the conviction of Pike River Coal Mine Ltd (in receivership) for breaches of the Health and Safety in Employment Act, 1992 and the reluctance of the receivers to pay reparations to the families of the deceased families, Brian Gaynor (July 13, 2013) posed the following questions in a recent opinion piece for the *New Zealand Herald*:

- Why won't Pike River meet its \$3.41 million obligation, even though it has received \$90.7 million in insurance pay-outs?
- Why has each family received only \$18,700 from the company when families in the United States received US\$1.5 million (\$1.9 million) each in a similar situation?
- Why has the Bank of New Zealand received all of its money back - plus interest - yet there is nothing left for the bereaved families?
- What are the legal and/or moral obligations of New Zealand Oil & Gas (NZOG), Pike River's directors and the Government as far as the \$3.41 million court order is concerned?

These are pertinent questions and highlight the vulnerability of the PRCM workers and its sub-contracted workers. However, before we explore these questions further it is necessary to first provide a background of the disaster. The case study below is based on the evidence reported in the Royal Commission of Inquiry and the Government's internal inquiry as well as conversations with the key informants and the families and friends affect by the PRCM disaster.

5.1. Pike River Coal Mine Beginnings and Management Challenges

Located within New Zealand's rugged West Coast Paparoa Range, Pike River Coal Mine is one of several underground mines in the region. The mine is located on Crown land adjacent to the Paparoa National Park and administered by the Department of Conservation. Because Pike River Coal was located on Crown land and next to a national park, the company was under strict conservation restrictions, which determined to a large extent how the mine was developed and constructed. Added to this was the fact that the terrain is exceptionally challenging, and the coal seam itself sits some 600 metres above sea level and within 100 metres of the surface. As with many of the West Coast mines, it was a particularly gassy mine in which methane was present in moderate to high levels. Information pertaining to the geology of PRCM and the extent and

location of the coal seam was based on an initial 14-borehole exploration, supplemented by a further similar number of drilled boreholes. It has been argued that the initial exploration provided insufficient geological information, which led to adverse unexpected ground conditions. These in turn meant that the construction of the drift took much longer than anticipated, as did mine roadway development²³. In spite of these challenges, PRCM was thought to be a viable prospect as it promised to produce sufficient premium hard-coking coal essential for manufacturing steel.

In 1988 Pike River Coal Mine Ltd was bought by New Zealand Oil and Gas from United Resources and was a subsidiary of New Zealand Oil and Gas until 2005. It should be noted that both companies were chaired by Tony Radford who has been described as a stubborn Australian ruling both companies with an iron fist²⁴. A feasibility study, funded by additional equity from outsider shareholders, was completed in the early 2000s. In September 2005, Saurashtra Fuels, a large Indian coal exporter, and Gujarat NRE Coke Ltd (GNCL), which is India's largest coke producer and is listed on the Indian share-market, put new equity into the company. Pike River listed in July 2007 after raising \$85 million from the public through the issue of shares at \$1 each. After the initial public offering (IPO), the shares were allocated as follows: New Zealand Oil and Gas: 31.1%; Saurashtra Fuels: 8.5%; Gujarat NRE Coke Ltd: 10%; Accident Compensation Corporation: 14%; existing minority shareholders: 7.9%²⁵. Unlike the public IPO shareholders, the corporate and minority shareholders gave themselves 22.5 million free options (exercisable at \$1.30 a share).

The Pike River Coal company had seven directors: chairman John Dow, Professor Ray Meyer, Stuart NaGrass, Tony Radford, Gordon Ward, Dipak Agarwalla of Saurashtra, and Arun Jagatramka of Gujarat. Tony Radford and Ray Meyer were also on the New Zealand Oil and Gas Board. An accountant by profession, Gordon Ward had been employed by New Zealand Oil and Gas for 20 years. He was chief executive and managing director of Pike River Coal Mine from January 2007 until October 1, 2010 when he left unexpectedly – 49 days before the first mine

²³ see Royal Commission of Inquiry, 2012.

²⁴ Gaynor, 2013.

²⁵ These figures must be treated with caution as there are a number of versions of the exact percentage held by each of the main shareholders. What is not in dispute is the Accident Compensation Corporation shareholding of 14%.

explosion at Pike River. According to the prospectus, “Gordon has been responsible for all aspects of the Pike River Project [since 1998]”. He was replaced as chief executive and managing director by Peter Whittall, who had been general manager of mines since joining Pike River in February 2005. The Royal Commission of Inquiry’s report into the disaster noted that the board did not verify that effective systems were in place and that risk management was effective. Nor did it properly hold management to account, but instead assumed that managers would draw the board’s attention to any major operational problems. The Royal Commission of Inquiry (2012:8) report also noted that: “the board did not provide effective health and safety leadership and protect the workforce from harm. Instead it was distracted by the financial and production pressures that confronted the company.”

Throughout 2010 the management team faced planning changes and operational challenges, including improving coal production, establishing the hydro panel, commissioning the new main underground fan, upgrading the methane drainage system, and resolving problems with mining machinery. These coincided with the drive to achieve coal production. There were also constant management changes over the years. In the 26 months preceding the explosion, there were six mine managers. The last mine manager at the time of the explosion was Doug White, former deputy chief inspector of mines in Australia, who was appointed as Statutory Mine Manager (or General Mine Manager) and Operations Manager in September 2010. A month later the formal reporting structures changed, and all managers were required to report to Doug White as site General Manager (except Angela Horne, Financial Controller, who reported to Peter Whittall). Technical service was provided by Peter van Rooyen who had been a technical service manager at Pike River Coal Mine since February 2009 but resigned on 3rd November 2010 a week before the explosion. Technical services were responsible for mine design including underground ventilation, surface, underground exploration, strata control, scheduling, surveying, and geotechnical functions but they were not responsible for gas monitoring.

5.2. Creditors

After the disaster and shutdown of the mine, the major secured creditor New Zealand Oil and Gas appointed Price Waterhouse Coopers (PWC) as Pike River's receiver on December 13, 2010. Under New Zealand receivership law, preferential and secured creditors have clear priority over unsecured creditors. At that time the company had \$11.3 million in cash,

\$110.4 million of creditor claims, and no operating revenue. However, by December 2012 the company had generated cash of \$103.9 million. The Bank of New Zealand and Solid Energy, which were owed \$23.5 million and \$400,000 respectively, have been paid in full as secured creditors. NZOG has been repaid \$50 million but it was still owed \$36.7 million, including accrued interest. An agreement was reached to pay \$10.7 million to unsecured creditors even though they ranked behind secured creditors. A maximum of \$18,700 per employee was classified as preferential, and \$1.4 million is still owed to employees on an unsecured basis.

5.3. Pike River Coal Mine Explosion

Against a backdrop of significant delays and spiralling costs, the attention of the executive management and the board was on increasing the level hydro coal production with little or no assessment of the associated risks. It should be noted that it is known that the use hydro mining exacerbates the levels of methane gas. After hydro mining began, high readings – many dangerously high – were recorded most days. The company also made the decision to place the main ventilation fan underground, which was unprecedented in any gassy coal mines in the world. The Royal Commission of Inquiry (2012:9) report stated that: “putting the fan underground was a major error. The decision was neither adequately risk assessed nor did it receive adequate board consideration. A ventilation consultant and some Pike staff voiced opposition, but the decision still was not reviewed”. Not only was the main ventilation fan incorrectly positioned, but at the time of the explosion there were too few gas sensors. Many of the sensors were not working or positioned incorrectly and others were not fit-for-purpose. Critical information regarding the use of hydro mining, the levels of methane gas, the lack of sensors, and poor ventilation were not properly assessed, and the response to warning signs of an explosion risk was either not noticed or not responded to.

It is a regulatory requirement that electrical equipment and cabling must be protected and incapable of sparking an explosion in restricted and dangerous areas of gassy mines. Investigations are continuing to establish whether an electrical cause could have initiated the explosion, and answers will depend on gaining entry into the mine. However, in the Pike River mine, electrical equipment and cabling was unprotected, and the risk of unprotected equipment and cables was never assessed. A number of variable speed drives (VSDs) were located underground. VSDs were used to controlled power supply to the fan and water pumps. There were problems with the VSDs, one of which was replaced and a number of

which were removed for repair. The extent of these problems underlined the need for a comprehensive risk assessment of the electrical installations underground at Pike River mine.

5.4. Subcontractors

As stated above, 13 of the dead were contracted workers. The table below outlines who died, their employer, what they were doing at the time of the first explosion, the amount the companies were owed by Pike River Coal Mine Ltd, and if applicable how much the companies were fined. At the time of the PRCM explosion, out of a workforce of 200, there were over 80 independent contractors employed at the mine. Pike River Coal's contracting bill is understood to be worth about \$80 million a year while its wage bill is understood to be about \$13 million a year. At the time of writing this paper, the 43 independent contractors are owed almost \$5 million by Pike River Coal Mine Ltd and a number of them have gone into receivership. The impact of PRCM disaster on local small independent contracting companies is illustrated by the closure of the company Morris Contractors. Morris Contractors started on the West Coast in 1984 and operated throughout the South Island. The company completed work for Pike River Coal Mine before the mine explosion of November 19, 2010 and is still owed \$58,000 by Pike River Coal. However, as unsecured creditors, Morris Contractors Ltd is unlikely to receive any of the money owing. Five months after the explosion the company went into receivership. John Morris, the company's owner, stated that he was "[...] proud of a team that I once led, very proud".

As mentioned earlier, PRCM not only subcontracted manual labour (skilled and unskilled), the company also outsourced aspects of the mine design, financial and environmental risk assessment, OHS planning, as well as engineering (including mine and ventilation) design. PRCM also used a number of contractors to support mining operations underground. They were involved in a range of activities, including shot-firing, in-seam drilling, electrical and mechanical work, pipe-laying, and construction. Many of the contractors in the mine had not previously worked in an underground coal mine and were not miners by trade.

Table 2. Pike River Coal Mine: Impact of The Disaster.

<p><i>Principal Employer</i></p> <p>Pike River Coal Mine Ltd</p> <ul style="list-style-type: none"> - Principal Employer • Number of workers killed: 16 killed • Fined: NZ\$760,000. & required to pay NZ\$3.41millions in reparations to the families. <p>Events Before to the Explosion:</p> <ul style="list-style-type: none"> • Eight men from C crew, Glenn Cruse, Christopher Duggan, Daniel Herk, Richard Holling, Brendon Palmer, Stuart Mudge, William Joynson, and Peter Rodger, were manning the alpine bolter miner (ABM), and driving a development road in the north-west corner of the mine. • Conrad Adams, the acting C crew underviewer, was last seen near Spaghetti Junction, but could well have headed to rejoin his men at the coal face. • Three men, Allan Dixon, Peter O’Neill, and Keith Valli, were manning the monitor in the hydro panel at the most northern location in the mine. • Because there were only two men, Blair Sims and David Hoggart, in the roadheader crew – too few to undertake roadway development – they were on maintenance duties near the roadheader. • The continuous miner located at the westernmost point in the mine required servicing; engineer Malcolm Campbell and fitter Koos Jonker were undertaking this work.

Contractors**Valley Longwall International (VLI) Drilling Pty Ltd.**

- **Independent Contractor:** Installation & maintenance of the Ventilation
- **Number of workers killed:** 3 killed
- **Fined:** NZ\$46,800
- **Unsecured creditor: ?**

Events Before to the Explosion: VLI Drilling Pty Ltd employees, Joshua Ufer and Benjamin Rockhouse, were working at the in-seam drilling rig close to the continuous miner. Joseph Dunbar, aged 17, was in the mine on an orientation visit. He was to start work the following Monday, but he went into the mine with two of the company managers and elected to remain with the drilling crew until the end of their shift.

Graeme Pizzato Contracting Ltd & Boyd Kilkelly Builder Ltd.

- **Independent Contractors:** Builders & general labourers
- **Number of workers killed:** 4 killed
- **Unsecured creditor:** owed NZ\$14,377.49 by Pike River Coal Mine Ltd (Receivership).
- **Events Before to the Explosion:** Riki Keane, an employee of *Graeme Pizzato Contracting Ltd*, was driving a loader used to remove spoil from the work site. His vehicle broke down near Spaghetti Junction sometime after 3:00pm and he was last seen there, trying to restart the vehicle. Daniel Rockhouse assisted him by obtaining hydraulic oil before he continued driving outbye into the drift. Three builders, Michael Monk, an employee of Graeme Pizzato Contracting Ltd, and Kane Nieper and Zen Drew, employees of **Boyd Kilkelly Builder Ltd**, were constructing a stopping in a cross-cut deep in the mine. Mr Drew, however, was last sighted in a nearby tool box area and could well have been walking back to the worksite at the time of the explosion.

Chris Yeats Builders (CYB) Construction Ltd

- **Independent Contractor:** driving men in and out of the mine & general labourers
- **Number of workers killed: 3 killed**
- **Unsecured creditor:** Owed NZ\$17,065.26 by Pike River Coal Mine Ltd (Receivership).

- **Events Before to the Explosion:** John Hale, an employee of CYB Construction Ltd, was a permanent 'taxi driver', ferrying men in and out of the mine on a drifrunner. He was last seen at Pit Bottom but was understood to be en route to Spaghetti Junction. Other CYB employees, Andrew Hurren and Francis Marden, were inbye of the junction, preparing a sump area for concrete to be laid.
- Mr Yeats said work at the mine made up around 10 per cent of his firm's business. Chris Yeats Building built the mining complex's pumphouse and shower block, as well as undertaking work in the mine itself.
- Mr Yeats said he was confident the company would not be hit too badly by the suspension of the contracts but believed smaller businesses could suffer more.

Subtech Services Ltd.

- **Independent Contractor:** Plumbers - installing a water pipe
- **Number of workers killed: 3**
- **Unsecured creditor:** Owed NZ\$12,876.80 by Pike River Coal Mine Ltd (Receivership).

- **Events Before to the Explosion:** Terry Kitchin, Milton Osborne, and Samuel Mackie, Subtech Services Ltd employees, were installing a water pipe in pit bottom south. Mr Kitchin, however, was last sighted in a roadway near Spaghetti Junction and could have been in transit at the time of the explosion.

*Near-Misses & Survivors***Pike River Coal Mine Ltd**

- **Principal Employer.**
- **Events Before to the Explosion:** Daniel Rockhouse, who was one of two survivors and worked for Pike River Coal Mine, left the crew, driving a loader to uplift some gravel needed for the roadway. Pike technical staff had also been into the mine to undertake various tasks but had returned to the surface before 3:45pm.
- Fifty-year-old Greymouth Russell Smith was a coal cutter for Pike River Coal Mine and was making his way down the mine just as the explosion occurred. He was dragged out of the mine unconscious by Daniel Rockhouse.

McConnell Dowell.

- **Independent Contractor:** Mining and excavation
- **Unsecured creditor:** Owed NZ\$1,288,257.38 by Pike River Coal Mine Ltd (Receivership).
- **Events Before to the Explosion:** As on any work day, others entered and left the mine at various times. A McConnell Dowell day crew of four men worked in stone, developing a stub to house equipment. The day shift finished at 4:00pm and the crew left the portal in a drifrunner at 3:41pm. The night crew of five workers was on the surface preparing to go underground when the explosion occurred.

Skevington Contracting.

- **Independent Contractor:** Underground mining ground support
- **Unsecured creditor:** Owed NZ\$188,026.95 by Pike River Coal Mine Ltd (Receivership).
- **Events Before to the Explosion:** Four employees of Skevington Contracting were also to finish work at 4:00pm and left the mine on the same drifrunner.

McNaughton Mining Services

- **Independent Contractor:** surveyors
- **Unsecured creditor:** Owed NZ\$26,253.39 by Pike River Coal Mine Ltd (Receivership)
- **Events Before to the Explosion:** Two surveyors, Callum McNaughton and Kevin Curtis, were walking out of the mine and flagged down the drifrunner. Callum McNaughton was the Pike River Coal chief surveyor but worked only part-time.

Coastline Roofing Ltd.

- **Independent Contractor:** Building Services
- **Unsecured creditor: Unable to determine how much they were owed**
- **Events Before to the Explosion:** Earlier still, about 2:00pm, Lyndsay Main, a Coastline Roofing Ltd builder, finished work early and walked out of the mine about 70 minutes before the explosion.

Source: Author's Own Elaboration.

From 2009 a small a sub-contracted project team, comprising a manager Terence Moynihan and two assistants, Rem Markland and Matthew Coll, were responsible for the general management of most of the smaller contractors including labour hire contractors. From around July 2010 onwards Pike River Coal Ltd had begun to engage contractors on one-hour contracts, which meant that contractors were going in and out of the mine on an hourly basis. While the project team tried to manage the day-to-day work of the smaller contractors, their role in terms of training the contractors in OHS was controlled by PRCM and was limited to just the construction and installation activities. The Royal Commission of Inquiry report revealed that until 2010 Mr Moynihan and his project management team were unaware of PRCM's health and safety policies and procedures and had not completed any documentation as to who was going down the mine and what they were doing. By mid-2010, PRCM management agreed that it would gradually improve its safety management system for contractors rather than delay the project work. However, no improvements were made by 19 November, which meant many

contractors had staff working underground at PRCM without their own health and safety system in place, and without the alternative protection of having their staff inducted into PRCM's health and safety system.

Because there was an absence of an effective safety management system for the contractors and their staff, there was also no auditing of contractor safety performance and no supervision of contractors underground. Although PRCM safety management system required regular audits of contractor safety performance, there is no evidence that PRCM managers audited either McConnell Dowell and VLI (two of the largest contractors) or any of the smaller contractors who lost men on 19 November 2010²⁶. As a result of this omission, PRCM was missing vital information on its contractors and the hazards that their staff and/or equipment might have introduced to the mine. Furthermore, there was no formal system requiring PRCM supervisors to regularly check the safety of contractors while working underground. In practice it was left up to the discretion of contractors to check their areas of responsibility within the mine. There was also no system to keep track of the locations of contractors once underground although the project team had a weekly plan that included information on where their contractors were likely to be working each day. Contractors were not restricted from moving around the mine and "pretty much looked after themselves". Visitors and contractors were required to sign in and out but often it did not happen, and neither that system nor the portal tag board helped the control room or the supervisors to keep track of contractors' whereabouts underground. It was not surprising therefore there was confusion about who were actually trapped in the mine days after the first explosion.

5.5. Victim Impact Statements

In July, 2013 Pike River Coal Mine Ltd (in receivership) was sentenced in the Greymouth Court. However, before sentencing, Judge Farish allowed the victims of the Pike River disaster to read out victim-impact statements. Below is a sample of the 21 statements made that day in Court. The first statement read out was from the blast survivor Daniel Rockhouse who is 27 years old and a father of four.

I should have died on that day and often wish that I had... This tragedy has left me feeling tremendous guilt for not being able to help others and questioning why I survived. My marriage had collapsed and my wife has returned to Germany

²⁶ Royal Commission of Inquiry, 2012:67.

with my children due to my anger and behaviour since this event [...] It started out as a happy day because I was going on a month's leave at the end of the shift [...] I met my brother, Ben, 21, underground in the mine and joked around as always oblivious to what was to take place. I lost my much-loved little brother, very close friends and workmates that day [...] While I did not hear the explosion and spent considerable time unconscious, the exhausting trudge out of the mine, supporting friend and fellow survivor Russell Smith, will haunt me forever.

I have had to shift to Australia to work in an underground coalmine to support my family. Not a day goes by without feeling fear and regret as I enter the mine. I now have little to show for my adult life and the road ahead looks very bleak. Since the blast, I have had to undergo considerable counselling, but have gained little benefit from it and am now unable to afford more. The [Pike River Coal Mine] blast's financial burden has been significant, such as relocation costs to Australia and having to start afresh in another country.

The former safety and training manager for Pike River Coal Mine, Neville Rockhouse also read out a statement. His son, Ben, 21, was killed in the explosion and his second son, Daniel, survived but is still traumatised by the experience.

It never goes away. It's with you every day. It's been an emotional two and a half years and I don't think any Kiwi has not been touched by this disaster in some way or form [...] Mistakes were made on that project and no-one can learn from those mistakes until you first acknowledge that you'd made some, and that's the first step in this thing never happening again in this country. I'm quite embarrassed having been a miner at Pike River.

Bernie and Kath Monk lost their son Michael in the disaster. They have been at the forefront of the campaign to investigate what and why the disaster occurred, to reform New Zealand's OHS framework, and to retrieve the bodies from the mine. Kath Monk, stated that:

The blast had been called an accident. However, the definition of an accident is an unforeseen event or one with no apparent cause, but in our eyes, this was not the case. We are disgusted that to this day no-one from Pike River Coal has apologised personally to our family for the loss of Michael. The lack of accountability of this disaster has been really hard to accept. It is really hurtful and insulting that no-one has accepted responsibility. It makes us feel that there is so little value placed on the lives of the 29 men. The blast had robbed our family of seeing Michael marry, have children and have a successful future. He was a handsome, self-assured young man with a smile that "could light up a room", hence his nickname of Sunshine. Michael's death has been a shattering experience and nothing can prepare you for this. It was a parent's instinctive duty to protect their children and we were not able to do this. Initially we clung to the hope that Michael had survived, was maybe injured, was he burnt, suffering, afraid, scared and calling out for our help. Was he alone, warm, did he have anything to drink?

He would expect we would be doing our utmost to rescue him, but we were not allowed any access to the mine area [...] We will continue to fight to have the men's remains brought out of the mine.

Milton Osborne's widow, Anna Osborne, told of her raw devastation at being unable to bring her husband's body home and was unable to hold a memorial service for him as a result. She said she had struggled with depression, anxiety, and illness since becoming a widow "in the blink of an eye" at age 44 years of age. Negligence by "so many people" had caused her husband's early death. She added:

"This was no accident. It was totally avoidable and unnecessary [...] This disaster should have and could have been avoided. So many people at so many levels failed our guys and destroyed our worlds [...] I find myself trapped in this surreal world of depression and a downward spiral where there seems no escape. I miss my beloved husband so badly, putting on a false smile when I go out but crumbling behind closed doors".

Peter O'Neil's widow, Tammie O'Neil, said her husband had 38 years of experience as a miner and would have been the most experienced man in the mine when it exploded. He was also an active member of Mines Rescue for 22 years and would have never put himself at risk. She stated that:

"The fact I have been unable to bury my husband has been difficult to bear [...] He has missed so many family milestones, including his youngest daughter's wedding last year. Since the Pike River tragedy, I have difficulty sleeping. I find myself continuously trying to relive Peter's last moments, wondering what he was thinking, did he suffer and what went so very wrong down the mine that day [...] There are days when I struggle to get out of bed in the mornings, go to work and try to be strong for my family".

A number of victim statements were read out by their lawyers and a sample of the statements are presented below:

- Samuel Mackie's mother, Beth Mackie, said about her only child: "An act of violence has been committed against my son and I am very angry and bitter. I had believed my child being born in New Zealand was very fortunate. That a company in this country could play Russian roulette with his life and the lives of 28 other men is like something from a horror movie".
- The parents of Malcolm Campbell, 25, of Scotland, said he had only gone to work in New Zealand while he waited for his Australian

residency to come through. They noted that: “Unfortunately this did come through on the day of the first blast”. Malcolm’s parents added that: “Not one day goes by without thinking of Malcolm. We wonder what kind of dad he would have been, how many children he would have had. Knowing he is on the other side of the world is just hellish”.

- John Hale’s partner, Brenda Rackley, said he told her the mine was disorganised and chaotic. “When he mentioned the safety issues at Pike, I became concerned for his safety and asked him to leave the mine several times. He always replied “I’m not leaving. I’m staying till the end of the contract”.”
- William Joynson’s widow, Kim Joynson, from Queensland, Australia, told the court she and their two sons had been in Christchurch for several major earthquakes while in New Zealand during the blast's aftermath. Her two sons also did individual victim impact statements, written by her, and detailing their health problems suffered as a result of their father's death. Benjamin, who was 11 years old when the blast occurred, started having intermittent epileptic episodes, which doctors blamed on stress from the Pike disaster. Their eldest son, Jonathon, who was then 13 years old and had mild autism, was put on suicide watch after the blast as his school feared he would self-harm. On one occasion he ran into the middle of the road to put himself in the path of a car but fortunately there was little or no traffic at the time.

5.6. Charges Laid

Pike River Coal Ltd (In Receivership) was charged with four offences of failing to take all practicable steps to ensure the safety of its employees; four offences of failing to take all practicable steps to ensure the safety of its contractors, subcontractors, and their employees; and one offence of failing to take all practicable steps to ensure that no action or inaction of its employees harmed another person. These failures relate to methane explosion management, strata management, ventilation management, and mitigating the risk and impact of an explosion.

VLI Drilling Pty Ltd (Australia) was charged with one offence of failing to take all practicable steps to ensure the safety of its employees; one offence of failing to take all practicable steps to ensure the safety of contractors, subcontractors, and their employees; and one offence of failing to take all practicable steps to ensure that no action or inaction of its employees harmed another person. On 26 October 2012, the company was

convicted on the charges and fined \$46,800.

Peter Whittall is charged, as an officer of Pike River Coal Limited, with four offences of acquiescing or participating in the failures of Pike River Coal Limited as an employer; four offences of acquiescing or participating in the failures of Pike River Coal Limited as a principal; and four offences of failing to take all practicable steps to ensure that no action or inaction of his as an employee harmed another person. These failures relate to methane explosion management, strata management, ventilation management, and mitigating the risk and impact of an explosion. Mr Whittall has pleaded not guilty to all charges.

6. Concluding Remarks

While we acknowledge that there is still a great deal more research to be done, we have endeavoured nonetheless to show that the multiple levels of independent contractors used at the PRCM illustrates the complexity of relationships inherent in most contemporary worksites. In addition, we argue that there is *vulnerability in contracting* and the “independent contractor” has in fact become the latest “vulnerable worker”. What is often missing in the discussion on engaging independent contractors in times of disasters is how little protection there is for these groups of workers who operate in the market as opposed to employees operating within the firm. Legislators have placed restrictions on the firm in terms of how and under what conditions employees can be employed yet these same restrictions are not transferred to the marketplace and to independent contractors.

Finally and more importantly we argue that independent contractors as victims have been omitted from the disaster literature. We argue that the story of the independent contractors is not confined to just their role in disaster control and recovery but is much broader and deeper than that. More often than not they are part of the community and they (and/or their families) are directly affected by the disaster, as was the case in the Pike River Coal Mine.

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The standard labour force definition used by Statistics New Zealand includes employers. We discount employers because our focus is on control or dependency of work.

Parties may access the Disputes Resolution Tribunal in some instances (if the sum sought is less than \$15,000 and other exclusionary criteria are not met).

Employment of Disaster Victims Supporting Reconstruction: the Role of the Emergency Job Creation Program in Emergency Temporary Housing Support¹

Akiko Ono *

1. Introduction

Many workers affected by the Great East Japan Earthquake lost their jobs as a result of the disaster, the number of displaced workers exceeding 110,000 some months afterwards². As well as losing their jobs, many of these workers were also forced to leave their residential communities, owing to the earthquake, the tsunami, the nuclear power accident or other reasons. Creating and allocating jobs with priority to disaster victims who have lost their places of work not only lets them earn an income with which to maintain their lives; it also offers a psychological support by maintaining connections with the local community amid a life of evacuation, when there is a tendency to become withdrawn. For the disaster-affected areas, too, it goes without saying that the vitality of local residents is essential to the process of recovery and reconstruction.

¹ This paper is a partially rewritten version of Ono [2013].

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² According to the Ministry of Health, Labour and Welfare (data published on May 25, 2011), a total of 111,573 unemployment insurance separation certificates and other documents proving unemployment were issued in the three disaster-stricken prefectures over about two and a half months from March 12 to May 22, 2011. This figure only covers workers enrolled in employment insurance; if self-employed and other displaced workers not enrolled in employment insurance are taken into account, the actual number is thought to be much higher.

On the nature of disaster reconstruction, Nagamatsu [2012] explains the rationale he calls “Cash for Work (CFW)”. According to Nagamatsu, CFW means “support through compensation for labor”; in other words, it is “a method of supporting the lives of disaster victims in areas stricken by natural disasters, conflict, etc., whereby the disaster victims themselves work toward and participate in the recovery and reconstruction, and are paid compensation for their labor”. The essential philosophy of CFW differs greatly from unemployment countermeasure projects primarily intended to maintain employment, in that “it builds a system for disaster victims themselves to become involved in activities aimed at improving the disaster area”. In other words, rather than simply finding jobs, greater emphasis is placed on sharing activity with the disaster victims, allowing them to reconstruct the disaster area and thus build a better future.

In the disaster area of the Great East Japan Earthquake, 55,000 workers³ have been hired in the three affected prefectures by way of (additional) funding from the “Emergency Job Creation Program (Disaster and Other Emergency Employment Response Project)” implemented by the Ministry of Health, Labour and Welfare. The scale of this Program was 50 billion yen in the First Supplementary Budget for FY2011, 200 billion yen in the Third Supplementary Budget for the same year, and 50 billion yen in the Supplementary Budget for FY2012, making a total of 300 billion yen. While the scheme and other details of the Program will be examined further below, the “Emergency Job Creation Program” provides a framework for packages of unemployment measures that had originally been implemented since before the disaster; it was not created under any concept of how disaster victims should be employed. However, as the current employment status of the disaster victims in the disaster area comes increasingly under scrutiny, the importance of the local reconstruction role played by this Program has been noticed, with the possibility that a situation close to the CFW advocated by Nagamatsu exists on a greater scale in the disaster area.

In this paper, issues and future directions will be discussed with reference to examples where the program has been used to employ disaster victims, on the perception that employing disaster victims as a driving force for the revival of communities is the primary significance of employing disaster victims. The paper will be composed as follows. First, an outline of the Emergency Job Creation Program will be given, and the basic

³ In data as of December 31, 2012 gathered by the Ministry of Health, Labour and Welfare, 13,923 workers were hired in Iwate Prefecture, 16,437 in Miyagi Prefecture and 24,498 in Fukushima Prefecture. The total for the whole country was around 119,000.

scheme and its implementation in the three disaster-affected prefectures (Iwate, Miyagi and Fukushima) will be summarized. Next, temporary housing support projects in Ofunato City and Otsuchi-cho, Ishinomaki City, Tagajo City, Watari-cho and Iitate-mura will be highlighted, and comments added from case studies. The role played by this program in maintaining and reviving local communities will be discussed, based on the way the program is managed and on the job content of support workers. Finally, the roles and problems of the program at the time of a major disaster will be extrapolated from the nature of these temporary housing support workers.

2. Disaster Response by the Emergency Job Creation Program

2.1. Meaning and Progress of the Government's Role as an Implementing Body for Employment of Disaster Victims

In recent years, local governments in Japan have been attempting to reduce their budgets and cut personnel. Under such circumstances, it was impossible for disaster-affected authorities to implement projects for reconstruction from a sudden major disaster using their own financial and human resources alone; therefore, some kind of support and relief measures were called for. As well as infrastructure and other “hard” recovery, there was an overwhelming need for manpower (“soft”) to meet the rapid increase of work in the disaster area. Amid the confusion, the “Emergency Job Creation Program”, which had been introduced by the government as a measure to combat unemployment after the Lehman shock, started to function as a receptacle for employing unemployed workers affected by the disaster. In many local authorities, in fact, projects using this framework were started two months after the disaster, and the fact that projects were able to start quickly when large numbers of manpower were required for recovery of the disaster area has been highly praised. Moreover, disaster-affected authorities were not hurt financially, as the funding for this program is sourced 100% from state coffers. And although there are several conditions and limitations when implementing projects (more detail on this later), the project content can be set relatively broadly and generously (although half of the project funding must be used as the wages for the employees). This is because the Program was basically created with the aim of employing unemployed workers in the short term. As a result, funding from this Program has come to be applied in a variety of projects where manpower is needed in disaster areas.

Major disasters such as the Great East Japan Earthquake are said to occur once in a thousand years. The fact that this Program, which seems capable of application without too much institutional input, existed quite by chance when such a disaster occurred was a stroke of good fortune in the midst of misfortune⁴. If it had not existed, the disaster area would almost certainly have struggled for means of securing human resources, and the reconstruction would have been delayed.

2.2. Scheme of the Emergency Job Creation Program

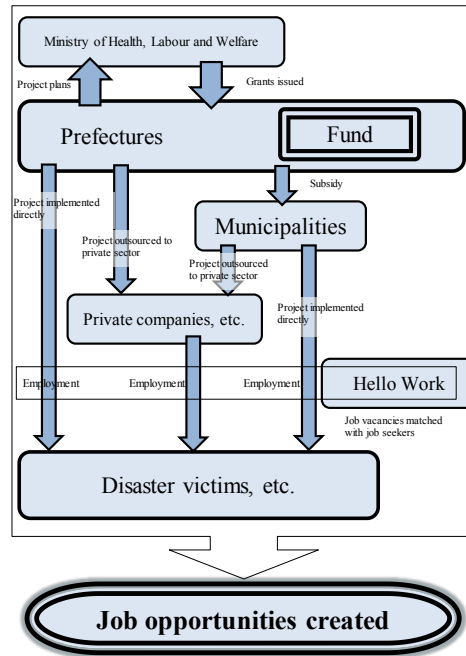
The Emergency Job Creation Program was created in 2008 as an emergency measure to safeguard employment and protect the livelihoods of workers after the Lehman shock. To combat the harsh state of local employment and unemployment, funds are established by issuing “Emergency Job Creation Program Temporary Special Provision Grants” to the prefectures, where they are used to create temporary job opportunities for unemployed workers (Fig. 1).

The Emergency Job Creation Program consists of two projects – one designed to locate temporary employment as a means of relief for the unemployed (“Emergency Employment Project”), and another that also includes human resource development to create new employment opportunities in nursing, healthcare, agriculture and forestry, the environment and other growth fields (“Priority Sector Employment Creation Project”). The “Disaster and Other Emergency Employment Response Project” (hereinafter “Disaster Response Project”) was created by adding 200 billion yen to the fund of this “Priority Sector Employment Creation Project” in response to the Great East Japan Earthquake⁵.

⁴ In the past, employment measures from funds after major disasters have involved setting up and using a reconstruction fund. Employment measures after the Unzen-Fugen Volcanic Eruption, the Great Hanshin-Awaji Earthquake, the Chuetsu Earthquake, the Noto Peninsula Earthquake and the Chuetsu Offshore Earthquake are summarized in JILPT [2012], where the necessity of a “Cash for Work” rationale is also explained.

⁵ As employment creation projects for disaster reconstruction within the Emergency Job Creation Program, the “Business Reconstruction Type Employment Creation Project” (hereinafter “Business Reconstruction Type”) was created in FY2011 and the “Lifelong Commitment / Full Participation / Generational Succession Type Employment Creation Project” (hereinafter “Local Employment Type”) in FY2012. In the Business Reconstruction Type, the Ministry of Economy, Trade and Industry, the Ministry of Agriculture, Forestry and Fisheries, local councils and others assist private companies in a disaster area with the costs of developing facilities, etc. At the same time, the funds are used to subsidize the cost of hiring staff. Employers must offer stable employment, i.e.

Figure 1. Schematic Diagram of the Emergency Job Creation Program.



Source: Ministry of Health, Labour and Welfare.

Under the “Disaster Response Project”, the conditions for eligible workers are that they should have “lost their jobs due to the impact of an earthquake or other disaster; however, disaster-affected jobseekers shall be employed with priority”. Here, disaster-affected jobseekers as defined as “persons who were employed by businesses in areas subject to application of the Disaster Relief Act, i.e. the prefectures of Aomori, Iwate, Miyagi, Fukushima, Ibaraki, Nagano, Niigata, Tochigi and Chiba, and jobseekers who were resident in those areas”. Another stipulation is that the projects involved should be “suitable as short-term employment opportunities for workers who have lost their jobs due to the impact of the Great East

“employment with no specified term, or fixed-term employment of at least 1 year with the option of renewal”, and support is expected to last for a maximum of 3 years. By contrast, the Local Employment Type is an outsourcing-based project whereby projects to assist locally rooted working styles and future independence are outsourced to private companies, NPOs and others. The employment term is at least 1 year and is renewable. The project scheme of the Local Employment Type adopts more or less the same format as when the existing Disaster Response Project is outsourced to businesses.

Japan Earthquake, etc., until they find their next employment, or projects for employing such workers and carrying out human resource development by teaching them the knowledge and skills necessary to gain employment in local companies, etc.”. In other words, the aim of the project is that it should combine the characteristic of “bridging employment” with that of training and other human resource development.

There are three possible routes for funds to flow from the prefectures. In the first route, the prefecture directly implements the project (directly employs human resources involved in public projects). In the second, the project is outsourced to private companies and other project managing businesses, which then employ human resources. The third route involves assisting municipalities, which may also implement the projects directly. As such, this route is subdivided into a route whereby the local council employs human resources directly, and another whereby the project is outsourced to a project managing business. These are recommended to advertise vacant positions via Hello Work. In other words, the project is broadly divided into direct employment by public bodies, and recruitment outsourced to private companies, NPOs, and others.

The specific use of the Disaster Response Project is broadly divided into employment in evacuation shelters and temporary housing, etc., employment in administrative work, and employment in recovery and reconstruction projects. Employment in evacuation shelters and temporary housing includes custodial work such as safety patrols and psychological care, and managerial work related to cleaning, transporting provisions, etc. Administrative work involves assisting public employees and responding to the rapidly growing list of administrative procedures resulting from a disaster (issuing documents, telephone exchange work, guidance at information desks, consultation, etc.). Recovery and reconstruction projects involve the work of clearing large amounts of rubble collapsed or washed away by the earthquake and tsunami, gathering fishing gear, etc., tidying elderly residents’ homes and cleaning tourist facilities, parks, and other areas. Work related to local reconstruction, meanwhile, includes delivering meals and shopping for the elderly, accompanying them on hospital outpatient visits, and support work for tourism, shopping malls and community business. When local governments do not employ directly via the fund route mentioned above, they outsource the project to companies, NPOs, chambers of commerce and industry, agricultural cooperatives, fishery cooperatives and others. The unemployed disaster victims are then employed by these organizations.

In principle, work provided under the “Emergency Employment Promotion Project” must have a duration of less than six months, renewable once only. On the other hand, employment under the “Priority Sector Employment Creation Project” may continue for up to 1 year. The same is true of the “Disaster Response Project”, although the latter can be renewed more than once. The projects were originally meant to remain in force until the end of FY2013, but considering the reconstruction status of the disaster area, among other factors, workers were permitted to remain in employment until FY2014 provided employment contracts had been exchanged during FY2013.

2.3. Implementation Situation of the Emergency Job Creation Program in the Three Affected Prefectures

About 45,000 workers have been employed under the Emergency Employment and Disaster Response Projects in the three disaster-affected prefectures (around 23,000 in FY2011 and around 22,000 in FY2012). The project is either implemented directly or outsourced by the local council. In a breakdown of the numbers employed, 62% are employed via outsourced projects and 38% directly⁶. In terms of the actual project lists of local councils, projects with particularly large numbers of employees are those outsourced to companies, NPOs and other organizations. The disaster-affected authorities face a vast shortage of manpower for local recovery and reconstruction, while on the other hand there are limitations in terms of human resources and capacity (such as hiring, management and deployment) when directly implementing projects. For these reasons, outsourcing is considered the more efficient option.

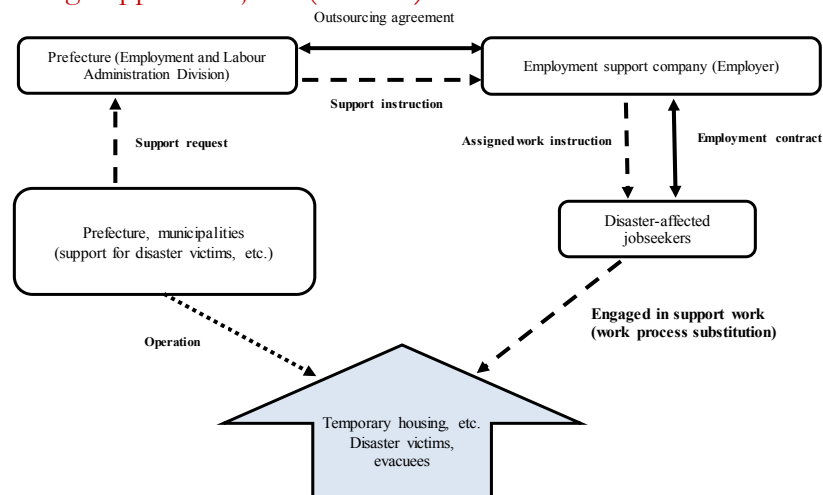
The implementation status of the Emergency Job Creation Program is similar in Iwate and Miyagi Prefectures. That is, municipalities have basically been instrumental in implementing the Program. This is not the case in Fukushima Prefecture, however; there, the damage from the nuclear power accident was greater than the direct earthquake or tsunami damage, and evacuees were scattered throughout the prefecture. As a result, the situation had to be considered in terms of measures going beyond the problems of individual municipalities and embracing the

⁶ From data published by the Regional Employment Measures Office, Employment Security Bureau, Ministry of Health, Labour and Welfare, FY2012. Calculated from actual employment figures for FY2011.

whole prefecture⁷. The prefecture therefore took the initiative to implement a “community bond-making support project” (referred to below as the “bond-making project”) using the Emergency Job Creation Program. The purpose of this project is to “form bonds between evacuees and with local residents, etc., by strengthening the system of operating temporary housing, etc., and at the same time to provide financial support for evacuees and unemployed workers through employment” (Fukushima Prefecture website).

The system of support in the bond-making project is shown in Fig. 2. The prefecture is divided into six areas, each with its own employment support company (temporary employment agency) as an outsourcing business, and these have created employment for about 2,000 workers each year.

Figure 2. Scheme of the Fukushima Prefecture “Community Bond-Making Support Project” (FY2012).



Source: Fukushima Prefecture.

⁷ For example, municipal residents who were forced to evacuate following the nuclear power accident are living in temporary housing built by the prefecture, or in “deemed temporary housing” (private apartments rented for evacuees). In projects related to this temporary housing, for example, there is uncertainty over which body is responsible for implementing them – the affected municipality, the evacuation-site municipality, or the prefecture. Normally, the disaster-affected authority would need to be in charge, but the local offices may themselves have fallen victim to the disaster and their staff evacuated, preventing them from taking the lead. In such cases, therefore, the prefecture took blanket control of the whole prefectural area and oversaw projects on behalf of the municipalities.

The general corporate foundation Cash for Work Japan (CFW-Japan [2013]) conducted a questionnaire survey of workers involved in the bond-making project⁸. The survey clarified a number of issues, such as the type of disaster victims employed by the Emergency Job Creation Program, and what sort of awareness they bring to their work.

Firstly, in their previous occupation, workers employed under the bond-making project tended more frequently to be in a relatively fragile employment environment compared to regular employees securely covered by employment insurance and the like (in other words, non-regular employees, etc.); 40% of them were currently the main earner in their household. Next, the content of the work was most commonly clerical work (44.5%), followed by light work (17.6%) and local community work (17.0%) accounting for about 80% of the total⁹. Also, experience of work before the disaster was being applied to the present occupation in more than 60% of cases; on wage levels, similarly, more than 60% responded that the level was “Just right”, suggesting that job matching had generally been successful. What was very interesting was the employees’ evaluation of the bond-making project. For example, to the statement “Having a job gives me hope for the future” (5-stage evaluation), the responses “Very much agree” and “Somewhat agree” accounted for 61.8% of all replies, while the statement “My affection for Fukushima has increased” received a positive response from 57.1% of those surveyed. These reveal that a sense of psychological fulfillment and affection for the locality has been engendered by being involved in the reconstruction project. Also, the results of factor analysis of psychological fulfillment (“Sense of connection”, “Sense of positivity”¹⁰) make it clear

⁸ Survey conducted in March 2012. Questionnaires distributed to and collected from workers employed in the bond-making project via the employment support company. Questionnaires distributed: 1,133, collected: 894 (collection rate 78.9%).

⁹ In 4th place was radiation-related work, as an assignment unique to Fukushima Prefecture, with 16.3%.

¹⁰ The evaluation of the bond-making project comprised 14 statements, from which factors related to a “Sense of connection” and a “Sense of positivity” were extrapolated via factor analysis. “Sense of connection” consisted of “I have a greater sense of solidarity with other disaster victims”, “The supported temporary housing complexes and local communities have been energized”, “I have been able to give support without hesitation, because we are all disaster victims”, “I can easily understand what support the disaster victims need, because we are all disaster victims”, “I am thanked by the disaster victims through the work”, “The bond-making project has allowed me to collaborate with voluntary local activity by neighborhood associations, residents’ associations, etc.” and “Those around us also understand that we project employees are also disaster

that working under the bond-making project is more effective in raising psychological fulfillment in those living under evacuation in temporary housing, etc.

3. Allocation and the Jobs of Emergency Temporary Housing Support Workers: Comparative Case Studies

3.1. Outline of Evacuees and Emergency Temporary Housing

In this part, emergency temporary housing support implemented under the Emergency Job Creation Program will be examined from case studies. First, however, the number of evacuees and the general situation of emergency temporary housing after the Great East Japan Earthquake will be summarized.

Emergency temporary housing is housing for disaster victims built in line with the Disaster Relief Act. The area per dwelling is stipulated as 29.7m² and the construction cost is 2,387,000 yen. When a disaster occurs, those displaced by the disaster (disaster victims) gather in primary evacuation shelters such as public halls and schools to ensure their own safety. In the next stage, victims made homeless due to collapsed buildings, etc., stay at inns, hotels or other similar facilities designated by the local council, or stay with friends or relatives, until they can move into emergency temporary housing (secondary evacuation shelters). At some later point, they move into emergency temporary housing or “deemed temporary housing” once it is built. Since the Great East Japan Earthquake, about 54,000 units of emergency temporary housing have been built (report by the Ministry of Land, Infrastructure, Transport and Tourism, April 2013). The first of these was completed in early April (Rikuzentakata, Iwate Prefecture); it was not until nearly a year later in February 2012 that all primary and secondary evacuation shelters in the three disaster-affected prefectures (Iwate, Miyagi and Fukushima) were closed.

According to an investigation by the Reconstruction Agency, the Great East Japan Earthquake produced a maximum of around 347,000 evacuees. Although this number started to fall some 18 months after the disaster in September 2012, even another year later (as of September 12, 2013),

victims”. “Sense of positivity” consisted of “My affection for Fukushima increased”, “I think I am encouraging disaster victims to be independent through this work”, “Having a job gives me hope for the future” and “The bond-making project has given me confidence in my future employment prospects”.

286,000 displaced residents were still living as evacuees in emergency temporary housing, etc. Factors contributing to this prolonged period of evacuation include the barriers imposed by various systems, laws and regulations on the purchase of land by local councils, accompanying moves to higher ground in coastal areas ravaged by the tsunami. Another major factor was the considerable time needed to negotiate with landowners and build consensus with displaced residents on the location of their new homes, among other processes.

Emergency temporary housing was initially to be provided for 2 years, based on the Disaster Relief Act, but this period of residence was later extended to 3 years, and again to 4 years this year. However, considering that temporary housing after the Great Hanshin-Awaji Earthquake remained in use for five years, coupled with the current state of delay in the construction of public housing for disaster victims, it is surely inevitable that the period will be further extended.

A problem that is feared to arise from this prolonged evacuation lifestyle is that of “solitary deaths”. After the Great Hanshin-Awaji Earthquake, there were many reports of people who had lost their jobs (mostly men), and with their community links severed, confined themselves to their rooms in temporary housing, succumbed to alcoholism and died alone. This was taken over as a challenge for future disasters. Subsequently, the need for “monitoring” and “patrols” was advocated from an early stage, in conjunction with the creation of emergency temporary housing after the Great East Japan Earthquake. This was partly due to the fact that population aging was particularly advanced in the disaster area. As a result, support workers came to be allocated to virtually all temporary housing. Most of these support systems make use of the Emergency Job Creation Program, and the activation of a support mechanism immediately after the completion of temporary housing was only possible because of the existence of the Program.

The points to be examined from the case studies are threefold. The first is to analyze what kind of project operation is being implemented using the Emergency Job Creation Program. Many cases involve outsourced projects, although some are also implemented as direct projects by local councils. The mechanism and organizational structure of support worker projects will also be examined here. The second point will be to divide the content of work by support workers into four types and to describe the content of each. Particular mention in this regard will be given to the rationale on caretaker work and the nature of local communities, and to differences in implementation. The third point will be to appraise the

characteristics of support workers (gender, age, previous occupation, etc.) and to identify issues concerning the Program's employment conditions. These points are summarized in Table 2 below.

Table 2. Content of Work by Support Workers.

<ol style="list-style-type: none"> 1 Patrols and monitoring activity (including the role of linking consultation content with government authorities, various experts and expert institutions) 2 Organizing and distributing relief supplies, communicating and coordinating with volunteers and support groups 3 Caretaking work <ol style="list-style-type: none"> (1) Reception-type role for temporary housing (2) Managing meeting places, encouraging their use, installing and managing noticeboards (3) Cleaning and weeding inside grounds (4) Looking after deliveries when addressee is absent (5) Procedures for moving in and vacating (6) Some administrative services including acceptance of Change of Address Notifications 4 Supporting community activities, helping with events and salon activities

Source: Author's Own Elaboration

3.2. Operational Methods and Organizational Structure of Projects

The operational methods and organizational formats of temporary housing support projects in the five municipalities, though similar in many respects, are not uniform. This is because the projects have evolved differently as each municipality has added its own ideas in accordance with need. Differences are also influenced to no small degree by the regional characteristics of the disaster areas, the rationale of local councils, the number of temporary housing and the size of housing complexes.

(1) Whether Outsourced or Implemented Directly

Of the temporary housing complexes in the five municipalities, four are operated under outsourcing agreements; the exception is Watari-cho in Miyagi Prefecture. In Watari-cho, support workers are directly employed as temporary staff of the local council, making it a rare case hardly found in any other disaster-affected municipality.

Broadly speaking, there could be three reasons why so many municipalities outsource support worker projects. The first is that outsourcing makes it easier to package them as single projects. The

second is that these projects have not been experienced or implemented by municipalities before, and so must inevitably be entrusted to external organizations. And the third reason is that the large numbers of workers employed would generate a large volume of administrative work, such as recruiting and managing labor, and this would place too great a burden on the municipalities if implemented directly. Another reason given was that “There is a greater sense of speed than if we (i.e. the council) were to do it” (local council representative). This is probably because, if the project were implemented within the council, various procedures would have to be followed rigorously, but a private-sector project manager would be able to simplify these and thereby achieve greater efficiency.

Although these same circumstances also applied to Watari-cho, the main reason why direct employment was chosen was that support workers needed to handle information on disaster victims that only directly employed public officials could handle. The Watari-cho office building was already scheduled for rebuilding due to dilapidation, even before the disaster occurred, but given the increased risk of collapse due to disaster damage, it was hurriedly demolished and the council’s work was transferred to temporary premises. However, the temporary office building was extremely cramped, making it impossible to respond to the many disaster victims visiting for a variety of procedures. Therefore, they were permitted to follow these procedures in the meeting places of temporary housing complexes, without having to go to the council offices. Although this response was implemented by administrative personnel who had come from all over Japan to provide support, the procedures were taken over by the support workers.

Let us now look in slightly more detail at funding patterns for these outsourced projects. Even municipalities that implement outsourced projects can be broadly divided into two formats (Fig. 3). The first involves cases where a disaster-affected municipality outsources temporary housing support to a private-sector project manager (arrows ① and ② in the Figure), this being the usual pattern. This first case applies particularly to Ishinomaki City, Tagajo City and other municipalities in Miyagi Prefecture. The second format involves cases where a disaster-affected municipality has suffered considerable damage, and the prefecture or a neighboring local council uses the Program to outsource to a project manager on its behalf (arrows ③ and ④ in the Figure). Temporary housing support in Ofunato City and Otsuchi-cho, Iwate Prefecture, has been outsourced and is operated by Kitakami City, further inland. Although this is an extremely rare case, it provides a good example

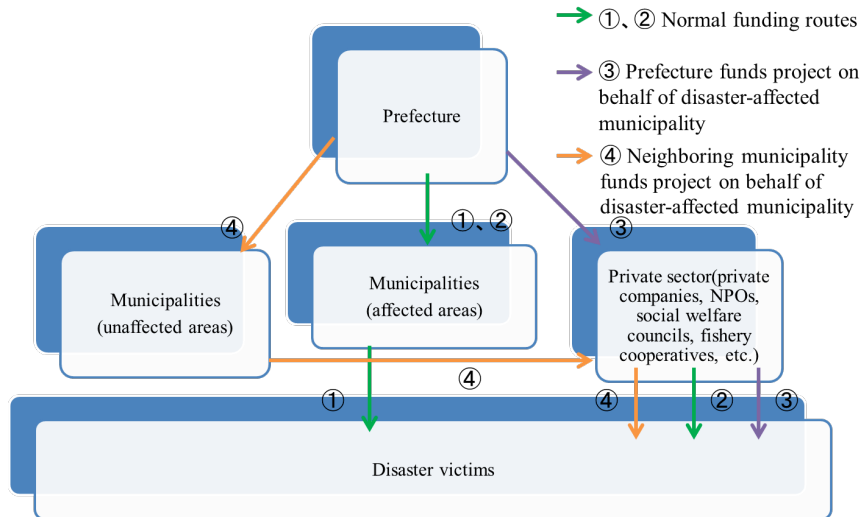
for reappraising the role to be played by local councils adjacent to a disaster area stricken by a large-scale disaster.

A representative from Kitakami says that, from the early stages of the disaster, they had decided to provide some kind of support to local councils in coastal areas suffering manpower shortages. That is not to say that Kitakami itself remained entirely unscathed by the disaster. Given the squeeze on local finances, there was not exactly a surplus of personnel, so that even if the idea of providing support had been tabled, taking action in reality would have been difficult without considerable decisiveness by the leader and substantial ability to take action. The uniqueness of the action by Kitakami derived from the presence of a Mayor who had long been involved in civic activities, and the fact that NPOs and communities nurtured by municipal policy were in a position to be spontaneously activated by requests for support from coastal areas. In other words, the project could move forward with Kitakami providing backup behind the scenes, and the NPOs and communities actually carrying out the work in integrated fashion.

Meanwhile, a case in which a prefecture is acting on behalf of a municipality has been seen in Fukushima Prefecture, as stated above. This is the case where the prefecture is implementing a system of support workers as a bond-making project in all areas of the prefecture. Another reason for this must be that prefecture has judged that the disaster-affected authorities have nowhere near enough capacity to cover the disaster victims, who have been evacuated all over the prefecture.

The fact that prefectures and neighboring councils have moved on behalf of these disaster-affected authorities to cover their shortcomings is based on the major premise of the Emergency Job Creation Program being funded 100% by the state. If local councils had needed to furnish even part of the project costs, one may imagine that things would not have gone so well.

Figure 3. Emergency Employment (Disaster Response Project) Funding Patterns.



Source: Author's Own Elaboration.

(2) A New Collaborative Format

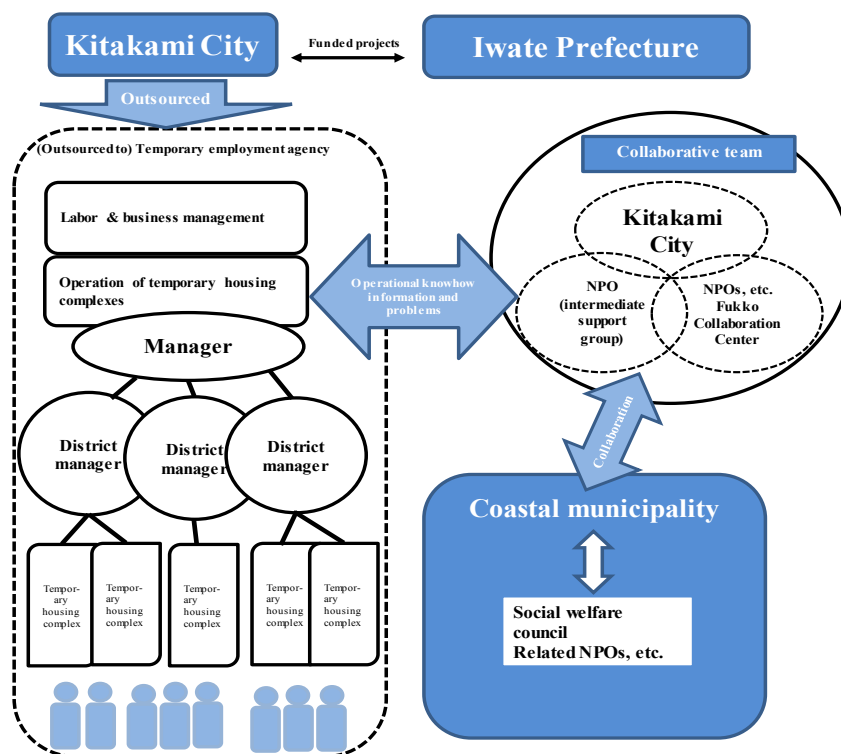
The project managers responsible for temporary housing support projects include NPO corporations and social welfare councils, as well as private-sector temporary employment agencies and outsourcing companies. Many of them already had experience of dealings with local councils since before the disaster, and most of them had started developing some kind of support for disaster victims independently as soon as the disaster struck. When operating temporary housing support projects, they provide support for local residents by complementing each other while linking up and collaborating with various other organizations and groups, rather than going it alone.

For example, the temporary housing project for Ofunato City and Otsuchi-cho in Iwate Prefecture was outsourced by Kitakami City to a temporary employment agency in Kitakami. The project adopts a scheme whereby an NPO in Kitakami and an NPO intermediate collaborative organization in Iwate Prefecture (Iwate Fukko Collaboration Center) formed a collaborative team to support the project operation. Meanwhile, they link up with the social welfare council in a coastal municipality to take care of custodial work (Fig. 4).

A representative from the NPO in Kitakami expressed the following extremely candid view on this kind of collaboration.

The NPO doesn't have that kind of capability, and Kitakami City doesn't have the budget, so I think that on the contrary, we're in a situation where everybody does what they can to somehow get through, using whatever is available. That's why it's very significant that we were joined by ... (the temporary employment agency) and a structure has been created in which we can each work in areas of our own expertise [...] (part omitted) [...] So for that reason, I think it was quite inevitable that we would become partners like this." (NPO in Kitakami City)

Figure 4. Scheme of a Temporary Housing Operation Support Project in a Coastal Disaster Area Implemented by Kitakami City.



Source: Kitakami City “Coastal Area Disaster Victims’ Support Project Team Activity Report” FY2011, p. 32.

The NPOs are experienced and have knowhow in project content such as community building, while the temporary employment agency employs many people and has capabilities including recruitment, hiring and labor management. The local social welfare council in the coastal area knows the situation of the local community very well from its activities at normal times. These organizations needed to execute the project while complementing each other's abilities by replacing their own shortcomings

with each other's strengths. This enabled them to execute a project in which they were not experienced, with limited resources, and quickly resolve the plight of the area amid such utter devastation. As a result, a hitherto unknown form of collaboration between local councils, NPOs, temporary employment agencies and other private companies has come to be seen in various parts.

In Ishinomaki City, where the state of damage was particularly severe, many volunteers, NPOs, companies and others started support activity as soon as the disaster occurred. The Ishinomaki City Council of Social Welfare set up a Disaster Volunteer Center immediately after the disaster, and stood at the core of many support activities. Partly because of this, collaboration with companies and NPOs has been seen when promoting temporary housing support projects. Support worker projects currently implemented by the Ishinomaki City Council of Social Welfare take the form of patrolling rather than permanent posting in temporary housing complexes. The original idea for this was a scheme proposed at no cost by a certain consultancy company (auditing firm) as part of its corporate social contribution. Two of the company's employees are said to have been permanently stationed for about six months to provide support, together with the volunteers. A representative from the social welfare council had the following to say about their work.

[...] I was quite nervous about getting them to commit to doing it at no cost. I thought they might want a huge fee. But we managed to exchange contracts based on a no-fee arrangement [...] Basically, we carefully decided the points on which we could collaborate, then the sequence of processes in order to achieve that, with each process according to a set time frame, and created a plan by setting up a schedule in this way. They would also create a training program. We showed them what we had done in various places and they researched that, saying what training was suitable for what stage of the project, or what was the minimum training we could do at a given time. They also advised us about estimates for visits. They did all of that [...] And so that was partly why we were given (the temporary housing support project¹¹). (Representative of the Ishinomaki City Council of Social Welfare)

The project by the Ishinomaki City Council of Social Welfare takes the form of a small number of people taking care of many temporary homes efficiently, by carrying out monitoring activities and livelihood counseling while patrolling rather than being permanently stationed in the temporary

¹¹ Parts in brackets have been added by the author to clarify the content of the statements. The same applies to other statements quoted below.

housing. The other work for temporary housing support discussed below (for example, holding events, community support, etc.) has been mainly implemented by the NPO, and roles have been allocated while sharing information. This is a form of collaboration typical of Ishinomaki City, where conspicuously large numbers of NPOs and volunteers were accepted after the disaster¹².

3.3. Content of Work by Support Workers

From the case studies, the content of work by support workers can be broadly divided into the following four types.

¹² In Ishinomaki City, where unprecedented levels of damage were suffered, support from many NPOs, NGOs and volunteers has been allocated and distributed functionally to create a major support effort not found in other areas. This is largely due to the Ishinomaki City Council of Social Welfare and the “Ishinomaki City Disaster Reconstruction Support Council” (now the General Corporate Foundation “Mirai Support Ishinomaki City”) functioning as receptacles for support. The side receiving support during disaster reconstruction also needs to create a functional system, and this is without doubt the key to speedy recovery and reconstruction.

Table 1. Emergency Temporary Housing Support Worker Projects.

Project format	Ofunato City & Otsubuchi-cho, Iwate Prefecture	Ishinomaki City, Miyagi Prefecture	Tagajo City, Miyagi Prefecture	Watarai-cho, Miyagi Prefecture	Iitate-mura, Fukushima Prefecture (Matsukawa Branch in Iitate Town, Fukushima City)
Project format	Outsourced (by Kitakami City) Collaborative team formed by local NPO (immediate support group) and local private business (human resources business company)	Outsourced Council for Social Welfare	Outsourced Private business (subcontracting of public work, etc.)	Implemented directly (hired as temporary employees of the local council)	Implemented directly (hired as temporary employees of the local council)
Number of temporary housing units (numbers)	148 complexes, 1,114 units (Ofunato City) 166 complexes, 2,109 units (Otsubuchi-cho)	134 complexes, 7,153 units	6 complexes, 373 units	9 complexes, 1,126 units	118 units (for Iitate-mura, 9 complexes and 665 units within Fukushima Prefecture)
Number of temporary housing support workers employed (in brackets)	103 (Ofunato City, 1/18), including 6 as work share (part-time)	169 (1/42)	23 (1/16), including 2 as work share (part-time)	23 (1/48)	7 (1/16)
Organization and system	City divided into 6 districts, each allocated a district officer, supervisor and support workers, places and common rooms inside temporary housing used as bases.	City divided into 10 districts, each allocated a district officer, supervisor and support workers, places and common rooms inside temporary housing used as bases.	Monitoring via permanent stationing and patrols -Organizing and distributing relief supplies -Coordinating communication with volunteers -Requesting public information, reporting problems and requests inside complexes to the local authority, social welfare council, etc. -Organizing and managing life of housing places -“Helping” with community building, such as cleaning, social welfare events and salons within temporary housing -Reception-type role to maintain security complexes, guard-type role to maintain security	Monitoring via permanent stationing as well as visits and patrols to individual units every day -Organizing and distributing relief supplies -Requesting problems and requests inside complexes to the local authority -Managing meeting places -Handling certain administrative services, such as accepting Change of Address Notifications (in the “Helping” with community building and interactive events inside temporary housing	After forming residents' associations, officers of the associations were stationed in the temporary housing complexes (1 in Iitate) permanently stationed in the meeting places, directly hired as temporary employees of Iitate-mura.
Content and scope of work	-Organizing and distributing relief supplies -Coordinating communication with volunteers -Requesting public information, reporting problems and requests inside complexes to the local authority, social welfare council, etc. -Organizing and managing life of housing places -“Helping” with community building, such as cleaning, social welfare events and salons within temporary housing -Reception-type role to maintain security complexes, guard-type role to maintain security	-Monitoring via individual unit visits and patrols -Organizing and distributing relief supplies for visits to per unit -Disrupting relief supplies -Introducing specialist staff for residents requiring support -Role of reporting problems and requests inside complexes to the local authority and service providers	After an evening health, reporting to specialists -Organizing and distributing relief supplies and requests inside complexes to the local authority -Disrupting relief supplies -Introducing specialist staff for residents requiring support -Role of reporting problems and requests inside complexes to the local authority and service providers	Monitoring via permanent stationing as well as visits and patrols to individual units every day -Organizing and distributing relief supplies -Requesting problems and requests inside complexes to the local authority -Managing meeting places -Handling certain administrative services, such as accepting Change of Address Notifications (in the “Helping” with community building and interactive events inside temporary housing	After forming residents' associations, officers of the associations were stationed in the temporary housing complexes (1 in Iitate) permanently stationed in the meeting places, directly hired as temporary employees of Iitate-mura.
Wages (funded by the Emergency Job Creation Program)	Support workers: hourly wage 850 yen Managers: monthly salary 210,000 yen	Support workers: Daily wage 6,400 yen, travelling expenses 1,600 yen per day	Management: 250,000 yen Support workers: Monthly salary 160,000 yen (+5,000 yen for children)	Hourly wage 840 yen	Support workers: Hourly wage 850 yen Leaders: Monthly allowance 10,000 yen
Working hours	8:30-17:30 (including 1 hour break) (2 workers - 8 hours)	8:30-17:15 (including 1 hour break)	40 hours a week (basic) on a shift basis; for work share, 20 hours/week each for 2 employees	Shift system, early shift: 8:30-4:30, late shift: 7:15-5:15, including 1 hour break	2 hours a day, 3 days a week (FY2012), 5 days a week (FY2011)
Training	Development of support workers' manuals, PC skills, training skills, case study seminar on occupations, such as NPO, etc.; Task sharing workshops held on site.	Training programs created by accounting consultancy firm at no cost. Training held over 4-5 days based on the firm's textbooks.	Training program exists. Participate in external seminars, etc. After the training, reports are submitted and circulated to all workers to deepen understanding. Shared by all to promote common understanding. Collective training held once a month (evening).	None in particular. Rely on accumulation of task sharing by doing over and posting on activities.	None in particular
Recruitment & hiring	Widely recruited using Hello Work, radio ads, in-person salons, study seminar on occupations, etc. Hiring rate generally 2 to 1.	Recruited via Hello Work. Recruitment and hiring operation partly outsourced to human resources company. Narrowed down to a certain number of applicants. Then social welfare council made hiring decisions based on factors such as the living hardship level of applicants. Hiring rate about 1.7 to 1.	Recruited via Hello Work, but at first the operation was carried out by the support workers assembled by word of mouth. Recruitment in around summer 2011 resulted in a hiring ratio of around 2-4 to 1. When comparing candidates on the basis of resumes, the living hardship level of applicants in their households were hired with priority.	Recruited via Hello Work and the local council's newsletter	Applications based on recommendations from residents' associations and the village
Characteristics of support workers	More than 90% are over 40. Females account for 70%. About 1 from gender employment support workers, self-employed workers (mainly produce processing and fabric workers among others).	Over 40% and women are in the majority. Previous occupation often tends to be self-employed workers. Those with living hardship are given priority.	Over 40% and women are in the majority. Previous occupation often tends to be self-employed workers. Those with living hardship are given priority.	Average age 42, female:male ratio 2:1. Farmers and self-employed workers (commerce) particularly common.	Mainly over-60s
Relationship with local community	Community support has been requested, but it is extremely difficult. Even when residents' associations are created and their officers appointed, the awareness of “temporary community building support in future, including salons and tea parties.	Though community support has been requested, it is extremely difficult. Even when residents' associations are created and their officers appointed, the awareness of “temporary community building support in future, including salons and tea parties.	Community support is requested, but it is extremely difficult. Even when residents' associations are created and their officers appointed, the awareness of “temporary community building support in future, including salons and tea parties.	It is difficult to maintain communities in the temporary housing, partly because people have moved into large-scale complexes in their-cho. However, support workers are working to connect. Nevertheless, support workers are helping with functions and events at meeting places in the hope that ties will be created.	Rebuilding local communities. Although residents are scattered over different districts, support workers are working to connect. Nevertheless, support workers are helping with functions and events at meeting places in the hope that ties will be created.
Interview date	09/06/2012	09/12/2012	10/31/2012	10/31/2012	11/20/2012

Source: Author's Own Elaboration.

(1) Patrols and Monitoring Activity

The role of temporary housing support workers and the primary purpose of establishing projects was to prevent “solitary deaths” among the temporary housing residents. This was to avoid a repeat of events after the Great Hanshin-Awaji Earthquake, when many disaster victims died alone. Therefore, all temporary housing support workers are expected first of all to keep a watchful eye on elderly, disabled or other disaster victims who could easily become isolated while living in temporary housing, and to help them with advice on their health and daily lives. Social welfare councils invest particular effort in monitoring and patrolling activity for the elderly, and offer subsistence counseling through patrol visits in their respective areas. As stated above, the support project of the Ishinomaki City Council of Social Welfare is being implemented with special emphasis on patrol visits. In Watari-cho, the temporary housing support workers of the local council and subsistence support workers of the social welfare council carry out monitoring activities with priority on the elderly and other vulnerable groups. At weekends, when the subsistence support workers of the social welfare council are off work, the temporary housing support workers of the local council take over the monitoring activity.

In many temporary housing complexes, support workers patrol the complex broadly but superficially, while for those residents who need further monitoring, subsistence counselors of the social welfare council collaborate to visit and carry out monitoring with priority. In this way, many temporary housing complexes are monitored by a number of organizations, which exchange information while making efforts to prevent solitary deaths and isolation.

(2) Organizing and Distributing Relief Supplies, Communicating and Coordinating with Volunteers and Support Groups

Next, organizing and distributing relief supplies, communicating and coordinating with volunteers and support groups are operations that invariably exist and whose implementation is shared in all temporary housing complexes. For the first year after the disaster, in particular, relief supplies were delivered without a single interruption. As well as supplies from municipalities, they were also brought in by various groups, companies and even individuals. The work of opening the boxes of relief supplies that have been received, then organizing and distributing the supplies is said to require a considerable investment of time and effort.

We received supplies of hundreds of kilos of rice. Of course, the rice was in bags, so it came in 30 kilo bags. And these would be unloaded one by one, but that wasn't the end of it. Heavy trucks just kept coming. And we were asked to distribute the rice equally to all households the next day, and all we got was orders like that [...] Equality is our motto, you see, and so we bought smaller rice bags for transferring it all, arranged for some weighing scales, and in a kind of human wave formation, all of the staff divided up the rice into smaller bags. (Representative of temporary support project manager in Tagajo City)

Volunteers and support groups also make frequent visits to the temporary housing, where they deliver relief supplies and hold events, etc. Communication, daily coordination and other contacts with these individuals and organizations are also important aspects of the work. Having support workers act as an interface helps to produce fixed routes and orderliness in the support, the support needed by the residents can be conveyed to the supply side, and any possibility of canvassing by dubious religious and other organizations can be blocked before it happens. However, when a year has passed after the disaster, things gradually start to settle down, relief supplies decrease, and the number of volunteers and others also declines. As such, the burden of this work may be considered to decrease with the passage of time.

(3) Caretaking Work

As shown in Table 2 ③ above, caretaking work is highly varied; the range covered by this work differs from council to council. Permanent stationing tends to be the norm for caretaking work¹³. Permanently stationed support workers often base themselves in meeting places and common rooms built within temporary housing complexes. Because these are located near the entrance to the complex and anyone visiting the

¹³ When permanently stationed, more support workers are required in towns along the Sanriku Coast, as there is little flat land and small-scale complexes are scattered here and there. This is why, in a comparison based on Table 1 above, temporary housing complexes in Ofunato City and Otsuchi-cho are smaller in scale than the others (on average, 48 homes per complex in Ofunato and 44 in Otsuchi-cho), inevitably meaning that more support workers are required. By contrast, Watari-cho lies on a gentle plain. It included a large plot of land where the new council offices were originally due to be built, so the temporary housing was built there. As a result, there are more than 100 homes in a single complex, and even if support workers were permanently stationed there, the overall number of workers would not be so great.

temporary housing must inevitably pass them, the workers serve a reception-type role.

In the temporary housing support projects in Ofunato City and Otsuchi-cho, the scope of caretaking work was decided from the very start of the project. The NPO at the core of the projects has set out “independence” of disaster victims as the “project theme”, and assumes the purpose of “helping”, “counseling” and “connecting” to achieve this independence. The attitude of the NPO is that work such as mowing grass and cleaning the inside of the complex is essentially community work; by providing services, community activities could be reduced. In this case, providing support would actually become a hindrance, in a classic case of mistaken priorities. Furthermore, as soon as it became a service provider, dissatisfaction with the service and further demands would mount up, and the support workers could become exhausted. That is why the support workers basically take care of “helping” and “counseling” the residents and communities and “connecting” them to the relevant organizations. As for providing services, however, it was felt appropriate to “do nothing”.

The value of the support workers lies in their just ‘being’ in the temporary housing and common rooms, rather than in their performance. By just being there, they serve to make various connections and help people. So it is not in achieving some kind of performance or producing an output where their value lies, but rather just in ‘being’ there. (Representative of NPO in Kitakami City)

At first, the temporary employment agency entrusted with the project management could not understand this policy. However, the NPO explained the rationale to its counterpart, the temporary employment agency, and the local councils also showed a deep understanding of the policy.

We (the temporary employment agency) wanted to take care of everything, but we weren’t allowed to. We were told so often, we got sick of hearing it – the workers would only be there to ‘help’. (Temporary employment agency representative)

This approach also seems to have been difficult for the temporary housing residents to understand at first. The support workers would occupy the meeting places during the day, making them hard to use, and complaints were received from residents, questioning what kind of work the support workers were actually doing. The temporary employment agency, as the project manager, repeatedly explained the role of support workers in this project to the residents. Now that a relationship of trust has been created with the residents, they also understand the work of the

support workers and are happy to gather in the meeting places. There, an environment for holding tea parties and knitting classes, playing *Go*, using personal computers and others has been created. Support workers and residents have found reassurance by meeting face to face, and community bonds are being recreated.

A different situation pertained in Tagajo City, where the project manager was extremely confused at the start of the project. In the words of a representative, “My biggest regret is that we could not clearly explain the position (of the project manager) to the residents at first.” At the beginning of the project, the municipal authority also gathered residents and held an explanation meeting about the temporary housing support, but not all of the residents understood the project. Many of them did not even attend the meeting, and even those who did were so preoccupied with their daily lives that talk of support worker projects “went in one ear and out the other”. With the project off to such a poor start, there was a succession of complaints and problems, starting with “What are you people doing here?!” and including the difficulty of using the meeting places, as they were occupied. The city representatives were also busy, and even if problems occurred they had no time to follow them up each time. The fact that the project manager was not a non-profit body such as an NPO or social welfare council but an ordinary private company was also disastrous in terms of the project’s image.

Viewed objectively, this project manager is taking its efforts very seriously indeed. Detailed reports are written every day, and the training is also better organized than in other groups. Reports during the training are detailed, as are comments on these. Services to residents are also provided in meticulous detail. “As the staff were expected to try their hardest, they approached the work with a strong determination that they could take everything on themselves,” the representative said to describe the troubled situation. It was not until about six months after the start of the project that things began to settle down.

I think it is the fact that we understood each other. For our part, what we needed to do gradually came clear, and as for the residents, they eventually understood the role of (name of project managing business). (Tagajo City project manager)

While the relationship between the project manager and the residents was gradually settling down, the media continued to fire shots at the city council, by suggesting that the project manager was unfit for the project. The city took the matter seriously and conducted a questionnaire survey of the temporary housing residents. The results proved that 97.8% of the

residents want the project to be continued by the project manager in question. Based on this course of events, the project manager was to continue implementing the project in FY2012.

In Watari-cho, too, support workers are also dealing with everyday matters that would normally be handled by local communities or individuals – for example, cleaning rooms, toilets and other communal spaces in the meeting places, or fixing faults in the temporary housing (counseling on complaints about power interruptions, blocked toilets, etc., and dealing with faults in home appliances issued as relief supplies). For the local people, however, they appear to have the image more of local council representatives permanently stationed in the meeting places than of temporary housing support workers; the confusion seen in Tagajo City and elsewhere at the start of the project was completely absent.

For the people in the temporary housing, I think there are some who feel that, though not actually from the council, they are like temporary employees of the council, and so they are just like local officials [...] It's like a place of reassurance for the residents, in various senses. I think the idea is probably rooted in their consciousness that, whenever there is a problem, if they go to the meeting place something will be done about it. (Watari-cho employee)

As this shows, the key to success in outsourced projects seems to lie in setting and explaining aims from the outset. Clarifying the range of the work, repeated explanation by the local authority of the project manager's role, and meticulous follow-up of teething problems will lead to smooth project operation later on. The support workers also need to convey to the residents that they are disaster victims too.

(4) Supporting Community Activities

As with the temporary housing support in Ofunato City and Otsuchi-cho, there are places where, by confining the management work to a stance of “helping” local community work, the aim is to energize the community. On the other hand, there are others such as Tagajo City and Watari-cho, where community work is actively undertaken through substitution by caretaking work.

Watari-cho originally had strong communities based on strawberry farming, fishery and other occupations, and even since the disaster, exchanges going beyond the temporary housing have continued. For the time being, the functions of residents' associations were substituted by support workers in both Tagajo and Watari-cho, and no inconvenience has been felt. This raises the question of how necessary it is to set up

residents' associations in temporary housing, which has the status of provisional residence.

In Watari-cho, the absence of a residents' association is said to be an advantage, if anything, in that it enables decisions to be made more quickly. When organizing a residents' association, questionnaire surveys or others are sometimes requested via the head of the association, but with this route it takes time to collect the responses. On the other hand, when support workers posted the forms directly to the residents, virtually 100% could be collected and collated in a short time. According to an employee of Watari-cho, "(Because there is no residents' association) Sometimes, work that they (the disaster-affected residents) should really be doing themselves seems to be just left to the meeting places." Nevertheless, it is effective for support workers to shoulder part of the work of community building, while maintaining a sense of distance so that the residents do not become unduly dependent on them. Another problem was said to arise after residents leave temporary housing and move to their next home. Although there would be no problem if local communities before the disaster could again live together, if people were to move into disaster public housing, for example, it would mean that people from various districts would be mixed up together again. Then tremendous energy would need to be exerted to find methods of launching new residents' associations and creating good local communities. In Watari-cho, they are searching for ways of supporting the creation of communities in future.

In terms of maintaining or rebuilding local communities, a particularly notable method of operating temporary housing complexes is found in Iitate-mura. This is because officers of the residents' association have themselves become support workers. Iitate-mura is a locality with unique initiatives between the local community and the village council, and an area where administration based on resident participation had taken root – so much so that it is sometimes featured in local research, etc.¹⁴.

One problem when the whole village of Iitate-mura had to be evacuated following the nuclear power accident was how to maintain the local community. When places where people live are physically broken up, the local community collapses. The ideal was for the whole community to evacuate together if possible. Although the evacuation of the whole village was decided on April 11th, some people had already evacuated for fear of

¹⁴ Community building in Iitate-mura has been described voluminously through long years of survey research by professors at the Faculty of Administration and Social Sciences, Fukushima University and others. For details, see Sakaino, Chiba and Matsuno [2011], and Chiba and Matsuno [2012].

radiation; others had stayed in secondary evacuation shelters until they could move into their preferred temporary housing, even when temporary housing was already available; and others still remained until around August, in connection with looking after cows, etc. As a result, the timing of evacuation was disjointed, and entering temporary residence together was difficult in reality. However, Iitate-mura has endeavored to keep tabs on the evacuated villagers, to prevent them from becoming isolated after leaving the village. For those entering temporary housing created within Fukushima Prefecture, residents' associations were set up from the initial stages of evacuation by residents. The steering organization of the residents' associations includes several village employees; caretakers (as temporary village employees) were decided by recommendation from among the villagers living in temporary housing, and one caretaker was hired for each residents' association from the village budget¹⁵. A group leader was also chosen for each residents' association, and the head and deputy head of the residents' associations were elected from among the group leaders. This is how the residents' associations were formed. After the bond-making project started in Fukushima Prefecture, officers of the residents' associations came to be employed as temporary housing support workers. Behind this lay the fact that, although these activities were undertaken by volunteers at first, too great a burden was being placed on them, and so the bond-making project would be used to pay compensation, by way of providing some assistance with living costs. Thus, in Iitate-mura, a system for actively promoting local communities has been created by having the group leaders of residents' associations act as temporary housing support workers.

4. Characteristics and Attributes of Support Workers

(1) Recruitment and Hiring

A condition for employment under the Emergency Job Creation Program is that the prospective employee should be a disaster victim and out of work. Recruitment and hiring of temporary housing support workers is mainly carried out by Hello Work, although other forms leading to hiring include recruitment by newspaper ads, fliers, the Internet, introductions

¹⁵ Using the framework of the Emergency Job Creation Program, these are directly employed as temporary employees, not under the bond-making project but as part of an Iitate-mura project. Working hours are 8 hours per day on weekdays.

by acquaintances, and independent recruitment by project managers. In many cases, it was difficult to gather enough people for the first recruitment, but then, in follow-up recruitment, more were at last encouraged to join in, thanks to word-of-mouth from others who were already employed as support workers.

When hiring, some project managing businesses take into account the degree of disaster damage, levels of subsistence hardship and other factors when making a judgment. For example, a representative of the Ishinomaki City project manager said the following.

(When hiring) We gave priority to people who really had no work and were in a household with subsistence hardship, people with dependents who had difficulty making ends meet. They are (mostly) people in relatively high age groups. As for younger people, we tell them that they would be better off looking for a different job, because it (the project) will have an end some day. Being temporary employment, after all, it might only last for a year. So when young university graduates of 22 (years old) or so come along, they may have the right attitude but we sometimes are not so sure. (Representative of the Ishinomaki City Council of Social Welfare)

The project manager in Tagajo City also states that it first asked prospective employees to write about the degree of disaster damage and level of subsistence hardship, to ascertain their situation before conducting interviews. For example, priority is given to employing single mothers who live in temporary housing. In one such case, the employee was only able to work part-time (20 hours) at first, in connection with childcare services, but then another person was found to work part-time, so that both could be employed in a kind of “worksharing” arrangement. Subsequently, the employee in question was permitted extended care hours at the day nursery and is now working full time.

We recruit on the basis of a 40-hour week, but one of the people who came said she had children, and it might be a bit difficult, what with having to pick the children up and so on. As we asked further, she turned out to be a disaster victim living in temporary housing, who was single and desperate to find work, but couldn't do so because of her home circumstances. So then we thought we would hire her as far as we could – that is, if we employed one person like this, we would have to employ another, to fill in the gaps. This was the format (worksharing) we adopted. (Representative of project manager in Tagajo City)

She later said her situation had improved, and she had been allowed extended nursery hours at the day care center, so could work full time. She wanted to earn more. She asked if she could earn more as she needed to earn money in order to be independent, and so we said OK, let's do that. So then, as she was now

employed for a full 8 hours (a day), her half-day (4 hours a day) was freed up, so we then employed someone just to fill that half-day, and that's the format we now have. (Same as above)

As for the attributes of support workers, those in their 40s and above account for a high ratio, though this partly depends on the work content and the system of temporary housing. Considering that these workers also provide subsistence counseling via monitoring, patrol and other activity, they need to be good listeners, and it may be that disaster-affected residents feel more comfortable when talking to people of middle age and above. Women also tend to be easier to talk to, and the ratio of female workers is relatively high. However, the functions performed by support workers not only involve monitoring and patrol activities, but, for example, also include distributing relief supplies, as well as a security enforcement role in terms of preventing crime. Male workers are more suited to this kind of work. In particular, when the temporary housing had only just been built, relief supplies were sometimes delivered in large quantities and there was a greater emphasis on physical labor.

There is a regional aspect to the workers' previous occupations. In areas close to Sendai, company employees account for a higher ratio, but in areas further away from the city, there are more self-employed and primary industry workers. Some of the female workers originally worked part time, but in some cases full-time housewives took work because their spouse lost his job or suffered a fall in income.

The role of coordinators or community leaders who supervise the support workers is allocated to former city hall employees or others with detailed knowledge of the situation, former company managers or others with superior man-management skills, and people with specialist experience such as nurses and helpers, among others.

In many cases, the pay is the about the same as or slightly higher than the hourly wage paid to temporary employees of local councils. Because these are outsourced projects, rules on pay are entrusted to the project managers. In some cases the set hourly wage rises according to the job title and work level, and bonuses may also be paid. Even then, however, a five-day full-time working week will only earn between 130,000 and 250,000 per month (even for managerial posts). This would be hard enough for a single person to live on, let alone when supporting a family.

In Iitate-mura, as stated above, the group leaders of the residents' association are working as support workers, and in FY2012 the basic system was employment for two hours a day on three days per week. Given the hourly wage of 850 yen, the monthly income would only be

around 20,000 yen. As this is nowhere near enough to make a living, the work is inevitably shouldered by older people.

(2) Problems with the Program's Employment Conditions

In some cases, project managers have problems with workers who, despite being members of the projects, remain unfunded, as they do not meet the employment conditions of the Emergency Job Creation Program.

Since the very beginning of the disaster, people from all over the country have traveled to Ishinomaki to provide support as volunteers. The Ishinomaki City Council of Social Welfare itself became one of the volunteer centers. There, young people have devoted themselves solely to volunteer activities for no pay over a long period of time, and by around September, six months after the disaster when the temporary housing support project started, they had become a core presence in support activity for disaster victims. The Council of Social Welfare wanted to employ these as coordinators or leaders, but could not go beyond the framework of the Emergency Job Creation Program, and is now making amends by applying a separate grant to them.

(Representative of Ishinomaki City Council of Social Welfare): [...] They were using up their private means to live and work as volunteers all that time. For example, you yourself (former volunteer A) must have used up about a million yen?"

(Former volunteer A): "Well, I don't actually know how much I used [...]"

(Representative): "After all, you stayed for more than a year, without any income [...]"

The project manager in Tagajo City has also employed people who do not come under the framework of the Program, at its own expense, but this employment will be difficult to continue in the long term.

At the moment, we have just one person who is not within the emergency employment framework. Actually, he was in Kanagawa Prefecture on March 11th, but his family home is here, so when the disaster occurred he abandoned his job and everything over there and came back here. We hired him because he said he wanted to be involved in the reconstruction work. But because he doesn't fit into the framework, we were going to have to let him go [...] So we said it would be OK for one year. But now, he is not included in the numbers for emergency employment. We are employing him completely at our own expense.
(Representative of Tagajo City Project Manager)

One of the constraints of the Emergency Job Creation Program is that half of the project funding must be used as wages. The remainder may be used to employ workers outside the scope of emergency employment, but the necessary costs are quite heavy and losses will apparently be inevitable. Nevertheless, although it is certainly important to hire disaster victims for emergency employment, a more pressing need from the project manager's viewpoint is to execute the project without delay. To achieve that, it is vital to have human resources who will act as a fighting force at the core of the project. In that case, it would have been natural for project managers to want to hire eligible human resources beyond the constraint that they must be disaster victims. Many people have come to support the disaster area from outside, but however enthusiastic they are about the activity, they will not work for nothing indefinitely. A mechanism that can guarantee activities is needed.

On the other hand, there are also cases of disaster victims who are outside the scope of the Emergency Job Creation Program because they are not unemployed. In the case of Iitate-mura, for example, the working format of support workers involves short hours and short weeks, and in reality, it is possible to double up with work outside the project. When working elsewhere, however, they are not eligible for the Emergency Job Creation Program and are not paid compensation, even when just as active as the others. In other words, confusion arises because, even within the same residents' association, there are some who are paid and others who are not. To prevent such confusion, some workers in the Iitate-mura temporary housing complex were reappointed in paid positions, but as a result these consisted only of elderly people. Although it would normally be desirable to have a broad range of ages in residents' association activities, if only for their continued existence, the constraints imposed by the framework when using the Program have resulted in an unexpected consequence.

4. Conclusion

This paper has examined temporary housing support worker projects funded by the Emergency Job Creation Program. Because this Program already existed before the disaster, support workers could be allocated as soon as the temporary housing was complete, and this had the effect of alleviating disaster victims' isolation, loneliness and anxiety.

To close this paper, the positive qualities and problems of the Program will be summarized, starting with the former.

Firstly, the Program has allowed project content to be set quite broadly, as the important thing is the “employment” itself. That is, funding can be applied to various projects thought necessary within the disaster area. Also worth noting is that the project was actively outsourced to NPO corporations, social welfare councils, fishery cooperatives and other local non-profit organizations as project managers, and that the projects have been developed by a composite structure combining private companies with local councils.

Secondly, the fact that project costs are 100% provided by the state. This made it possible to create flexible support systems involving not only disaster-affected municipalities but also collaboration from neighboring local councils on their behalf. One method of stimulating project activities has been the way in which the financial burden on the support provider has been reduced.

Thirdly, the fact that this Program already existed quite by chance. That it existed quite by chance was indeed a happy coincidence, but also highlighted the problems if it had not existed. While the Emergency Job Creation Program is a policy implemented by the Ministry of Health, Labour and Welfare, if we consider that this kind of function will always be required at a time of disaster reconstruction, we need to create a mechanism enabling the Program to be activated immediately, in combination with the Disaster Relief Act and others.

Next, problems that have emerged when applying the Emergency Job Creation Program to employ disaster victims will be enumerated.

Firstly, the condition that employment should be limited to disaster victims. Stipulating that people cannot be employed unless they are disaster victims and unemployed is somewhat troublesome, from the perspective of executing disaster area reconstruction and disaster victim support projects. If large numbers of people are to be hired to execute projects aimed at reconstruction, a suitable system of organization will also be necessary. Limiting the employment of human resources needed for project execution (including management and specialist personnel) to disaster victims presents a major hurdle to securing human resources. Under this condition, moreover, people from outside the disaster area could not be hired even if they wanted to be involved in reconstruction work in the disaster area. Although nothing would be gained by depriving disaster victims of employment opportunities, the system should be changed so that the human resources needed to propel a project can also be hired outside the framework of the Program.

Secondly, another point on the condition that workers must be disaster victims concerns workers who are disaster victims but are not unemployed¹⁶. When considering the maintenance or revival of local communities, it should be possible for people to be involved in local reconstruction work, even if they are not completely unemployed. Jobs in local reconstruction need not necessarily be confined to full-time work alone. Using worksharing schemes to involve as many people as possible will increase awareness of reconstruction in the disaster area, and will also have advantages in the psychological fulfillment of the disaster victims and fostering communities.

Thirdly, there is the problem of duration. In FY2014, funding from this Program will temporarily close. The intention is that the Emergency Job Creation Program should serve the role of short-term employment as a bridge, and that there should be a shift to long-term employment as the policy for the next stage. However, the current state of the disaster area has yet to be resolved, and there are still many emergency needs characteristic of a disaster area. Temporary housing will probably continue to provide homes for people for some years to come. These people will still need to be monitored. We will need to identify the projects needed for each stage of recovery and reconstruction in the disaster area, and to continue the projects that are still necessary. Just as there are some projects that can be undertaken en masse over a short period, there are others that need to be continued painstakingly for longer periods. They should not be seen in the same light as unemployment countermeasure projects at normal times.

Fourthly, although the Emergency Job Creation Program has the purpose of “employing” and acting as a bridge, the act of “working” is not limited to “employment”. Considering that the disaster victims themselves will stand up and work toward reconstruction, support also needs to be given to people “working” as entrepreneurs and one-person businesses. In the disaster area, various autonomous activities have been developed by identifying local needs. This provides a stimulus not only for voluntary organizations but also for NPOs and social enterprises to launch themselves as community businesses; in fact, many groups have sprung up and are active, but their business situation is uniformly harsh. Schemes are

¹⁶ There have been cases where representatives of NPOs and others created for disaster reconstruction were excluded from the framework of the Emergency Job Creation Program and lost their income, on grounds that they were not employees but employers – despite the fact that they were disaster victims who had lost their jobs.

also required to support work by disaster victims, including the creation of groups and business development.

Fifthly, the way in which projects related to local communities are undertaken. Immediately after a disaster, the victims must have enough on their minds just trying to protect their own and their family's physical safety and livelihoods. In this kind of situation, it would be better to abandon any thought of the community as impossible. In particular, temporary housing is created in an emergency, and many people from different districts live packed together in a cramped space. It is self-explanatory that community building will not work as it does at normal times. Creating order in that space is a job for people engaged in caretaking work as an occupation, and should not be expected of the community.

People who live in temporary housing move away once their next abode is decided. As time passes, empty units become noticeable. When people who were once enthusiastic about community activity have moved away, a hollow is created, and it becomes harder to maintain communities in temporary housing. If anything, the main issue should be to focus on community building in the places where people move after leaving the temporary housing. Community building in the new localities will create differences in regional strengths. It is felt necessary to include this aspect when creating systems of support for disaster victims.

In this paper, the nature of employment of disaster victims has been discussed, based on case studies of temporary housing support funded by the Emergency Job Creation Program. As a country with its national landmass in a region where major earthquake disasters will inevitably occur, we need to review the benefits and challenges of funded projects as initiatives toward recovery and reconstruction after this major earthquake disaster. They should be allowed to develop as work by the disaster victims and local reconstruction projects, without being confined only to unemployment measures and employment policy. Finally, we need to build mechanisms that can be activated as soon as a disaster occurs.

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The Great East Japan Earthquake: Its Damages, Impacts on the Labor-economy and the Restoration Measures of the Government

Shinichi Umezawa ·

1. Unprecedented Disaster

1.1. Overview: What Happened?

On March 11, 2011, the Great East Japan Earthquake of magnitude 9.0¹ occurred, with the hypocenter offshore of the Sanriku coast or Tohoku region² of Japan. The ensuing huge tsunami hit the east coast of Japan³, causing unprecedented damage and nearly 16,000 deaths and less than 3,000 missing people. The tsunami also hit the Fukushima Daiichi nuclear power plant of Tokyo Electric Power Company (TEPCO), causing a complete loss of power and hydrogen explosions. The government instructed local people living within a 20-kilometer radius of the power plant to evacuate from their homes to avoid radiation exposure. Inevitably, such an evacuation lasts a long time, and almost 290,000 people remain unable to return to their homes as of the end of August

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¹ At magnitude 9.0, the earthquake was the fourth largest in the world since 1900. See Table 1.

² Tohoku is the north-east region of Japan.

³ Tsunami of 3.0 meters or higher hit six prefectures, but the hardest-hit were Iwate, Miyagi and Fukushima.

2013⁴. Some of these people are forced to live apart from their families in order to get a job or for their children's education.

As an initial recovery effort, a large supermarket retailer and a "convenience-store" chain company attempted to transport emergency food to some devastated areas, surprisingly on just the second day after the earthquake, but amid the chaos many problems remained for a long time, such as shortages of food, water, and clothing, unsanitary conditions including toilets, no electricity or telephone service, and lack of privacy in the living environment. Many refugees stayed at nearby local schools or community centers as emergency shelters from the first day, but those living in open areas of schools' sports grounds, for example, had to endure a complete lack of privacy in daily life. People continued to live in such public facilities for several months in some areas. Transportation was another serious problem: many roads and railways were destroyed by the tsunami, and some areas were immediately cut off and could not be accessed from the outset. Emergency food and refugee goods were quickly sent, but could not reach the areas easily. Some of the severely destroyed railways, roads and highways took a very long time to reopen.

⁴ In 2013, the government tentatively permitted people to live from August 1 to October 31 in one of the towns in Fukushima prefecture that used to be designated as a prohibited area. This will be the process of de-restricting the areas. Based on the Disaster Measure Basic Law of Japan, two categories of restricted area were designated immediately after the nuclear accident: namely, a strictly restricted area within 20 km from the plant, and an evacuation-prepared area beyond 20 km from the plant where accumulated exposure to radiation is expected to exceed 20 milli-sieverts annually. In April, 2012, the categories were reorganized into three: "return-difficult area" where accumulated exposure is unlikely to fall below 50 milli-sieverts within 5 years, "preferably restricted area" where exposure of over 20 milli-sieverts is expected, and "restriction-release-prepared area" where exposure of less than 20 milli-sieverts may be realized.

Table 1. The World's Major Earthquakes Since 1900.

Year	Place	Magnitude
1960	Chile	9.5
1964	Gulf of Alaska	9.2
2004	Sumatra North (west offing), Indonesia	9.1
2011	Great East Japan Earthquake	9.0
1952	Kamchatka Peninsula	9.0
2010	Mauri offing, Chile	8.8
1906	The offing of Ecuador	8.8
1965	The Aleutian Islands, Alaska	8.7
2005	Sumatra North	8.6
1950	Tibet Assam	8.6
1957	The Aleutian Islands, Alaska	8.6

Source: Author's Own Elaboration.

The emergency shelters were gradually closed within 2011 because the facilities needed to be vacated for schools or for the public. Instead, local prefectural governments soon started to build temporary housing for the refugees. The Iwate prefectural government, for instance, completed the first new temporary housing in early April 2011. However, particularly in the early stages, the local governments as well as local people themselves had to rely on these shelters for housing for some time because there was a severe shortage of temporary housing. The facility that was used as a shelter for the longest period among the three devastated prefectures⁵ was in Fukushima, and did not close until the end of 2011.

The earthquake also had a massive impact on economic activities. The disruption of the supply chain in some manufacturing industries greatly affected markets in Japan and overseas, although some industries such as auto manufacturing recovered quickly. However, the exposure of agricultural food and dairy to radiation severely hit the consumption of such products. Once radiation contamination exceeding the regulated level was identified, the government forbade its shipment; when contamination fell below the regulated level after several examinations, the government canceled the ban. However, consumption did not recover quickly because consumers remained deeply concerned about food safety. Such damaging rumors persisted and prices remained low for a long time. The fishery industry was also seriously affected by the tsunami; many

⁵ The prefectures are Iwate, Miyagi and Fukushima, which were most heavily damaged by the earthquake, as referred to in note 2.

harbors/ports and inland seas along the Sanriku coast were severely damaged by the tsunami and debris, and recovery took a very long time. Many fishermen had to abandon their work because their boats had been lost or destroyed, and some fishermen were too old to take on new debt. Only recently have fishermen restarted their business and harbors restarted operation after new facilities were established.

Another issue is the severe delay in restoration compared with the original plan. The delay had two main reasons: 1) it took municipal cities a long time for technical reasons to draw up restoration plans to be submitted to the government, and 2) even after plans were made, the overall recovery process was delayed by the shortage of construction materials, resources and manpower.

Regarding the government's policies for restoration, the former Democratic Party Cabinet earmarked a budget of 19 trillion yen to be spent over five years, and the planning seems to have made a good start. However, it took municipal governments a very long time to complete plans to be submitted to the government. According to the restoration plans of the central government, local municipal governments were requested to submit overall plans for the restoration and infrastructure, but municipal governments lacked skilled engineers or officials with technical knowledge and struggled to do so. In addition, landowner approval must be acquired before submitting plans, but this was difficult to obtain. Some municipal governments have only recently started to finalize their restoration plans.

Finally, the Fukushima Daiichi nuclear power plant of TEPCO is another serious issue. Even though the worst situation of the first three to four months has passed, the situation is not under control as outlined below⁶. First, the reactor-cooling system is still using temporary equipment built in mid 2011, and the amount of radioactive-contaminated water is increasing. From the beginning, it has been suspected that groundwater might be leaking through the reactor buildings on the site because the amount of water required to cool the reactors, which circulates among the reactors in pipes while its radioactivity is being decontaminated, has been increasing day by day. It has now been announced that 400 tons of

⁶ The nuclear reactors' problem finally passed the worst stage in July 2011, when the first reactor-cooling system, after frequent failures in trials, started to operate stably. Before that, there was a risk of the heavily contaminated water spilling from the cooling water tanks. However, this nuclear-reactor cooling system, developed mainly by a French nuclear company, often failed and was finally replaced by the current one developed by a Japanese company.

groundwater are leaking into the site per day and becoming contaminated, and so TEPCO is constructing tanks on the site to store this water. These tanks are taking up an increasing amount of space at the power plant, but more importantly, it has recently been found that water is leaking from the tanks, and TEPCO has admitted that radioactive-contaminated groundwater may be leaking into the sea. Civil engineering solutions to wall off the contaminated groundwater from the sea are being studied, but this is thought to be extremely difficult⁷.

Second, according to the government's current road map toward decommissioning the reactors, the fuel rods are scheduled to be removed from reactor n.4 in November this year. However, radioactivity levels around the reactors remain extremely high, and it is not clear how the work of decommissioning the reactors can proceed in view of the high risk of exposure to radioactivity.

1.2. Current Crucial Issues

In addition to the main issue of how to speed up the restoration process⁸, the following two issues are also crucial for the mid-term policy.

First, how to procure energy sources and deal with the nuclear power plants. This is outside the realm of expertise of the JILPT, but the energy issue triggered by the stoppage of all nuclear power plants in Japan is critical for the mid-term economic policy.

All reactors that were halted for regular check-ups when the disaster happened were unable to restart, and other plants were also eventually stopped for regular check-ups. As a result, all nuclear power plants in Japan eventually ceased operation. How to procure energy sources and how to deal with the nuclear plants has become a vital policy issue for Japanese society and economic development in the mid to long term. An authorized committee of the government to assess the safety of nuclear power plants, which has recently set a standard⁹ to permit the resumption of operation of the nuclear plants, is now assessing applications from

⁷ However difficult it may be, it should be managed firmly and completely because the prime minister Shinzo Abe expressed commitment to handle the Fukushima nuclear power plant in his speech at the International Olympic Committee (IOC) meeting in September 2013 to choose the city for the Olympic Games in 2020.

⁸ See chapter 4.

⁹ The main principles are that no nuclear power plants are to be permitted on fault lines, exhaust pipes for vents are to be equipped with filters, and nuclear power plants are not to operate for more than 40 years.

power companies and will decide whether to allow them to resume operation.

The second issue is the management of TEPCO. The company has a duty to compensate local victims¹⁰ and decontaminate the radioactivity¹¹ so that evacuees can return home, and is also responsible for decommissioning the reactors and managing the contaminated groundwater. Regarding economic compensation, the government established a financial scheme so that TEPCO can borrow the required money from the government to compensate victims, but otherwise has encouraged TEPCO to manage the situation itself. The government has been cautious about committing itself to compensation because it will inevitably require a huge budget, and might induce TEPCO to neglect its responsibilities. However, the government now seems to realize that TEPCO's response so far has been inappropriate, inadequate and too slow, and has reportedly decided to handle these issues from now.

2. Impacts on Economic Activities

2.1. Impacts across the Country and in the Devastated Areas

Immediately after the earthquake, both industry and the government were deeply concerned about severe, long-lasting impacts on the macro-economy. The devastated area is a center of agriculture, dairy, fishery, and component-manufacturing industries, and the shock to supply chains was serious.

Industrial production as a whole dropped 16.5% in the first month, the largest recorded fall in one month, but economic indicators show that the negative impacts on the macro-economy were quickly reduced due to a variety of factors, including companies and business organizations voluntarily assisting the production of the devastated companies. The auto

¹⁰ However, the Nuclear Damage Compensation Law of Japan stipulates that, in the case of a massive natural disaster, a nuclear power plant company might not be held responsible for the damages caused; therefore, the range of damages for which TEPCO should be responsible is highly controversial. The issue reminds one of J.M. Keynes's *The Economic Consequences of Peace*, which criticized the Versailles Peace Treaty which set the amount of reparations after the First World War, due to the risk of tipping Germany into insolvency.

¹¹ As explained in chapter 4, the government decided to remove the topsoil in residential areas in Fukushima to reduce the radioactive contamination so that evacuees can return to Fukushima and live a safe and normal life.

industry was among the fastest to recover; assembly plants completely stopped production for the first month, but production levels returned to almost normal within three to four months.

Table 2. Major Economic Indicators Related to the Great East Japan Earthquake.

	Production (index)	Real GDP % change from previous quarter	Trade surplus		Electricity sale (% change from previous year)		Nikkei stock average (yen: end of month)	Yen exchange rate (monthly average)	BOJ survey		Bankruptcy % change from previous year	Unemployment rate (%)		Ratio of new job openings to applicants
			(billion yen)	Export (% change from previous year)	Country as a whole	TEPCO area			Business sentiment (DI: large companies)	Employment sentiment (DI: large companies)		Country as a whole	Tohoku region	
2011.1	102.1		▲ 399	2.89	3.0	1.5	10,237.92	82.63			2.85	4.8		0.60
2	102.7		720	9.71	4.6	3.0	10,624.09	82.53			▲ 8.49	4.7		0.62
3	85.8	▲ 2.0	237	▲ 1.36	▲ 1.4	▲ 5.9	9,755.10	81.79	6	4	▲ 9.32	4.7	5.5(0.1)	0.62
4	87.6		▲ 412	▲ 12.66	▲ 6.5	▲ 13.8	9,849.74	83.35			▲ 0.62	4.7		0.61
5	93.6		▲ 771	▲ 9.78	▲ 6.5	▲ 11.9	9,693.73	81.23			9.67	4.6		0.61
6	97.5	▲ 0.8	130	▲ 1.02	▲ 5.1	▲ 10.4	9,816.09	80.51	▲ 9	7	▲ 5.53	4.7	6.0(0.5)	0.62
7	98.7		142	▲ 2.26	▲ 5.0	▲ 11.0	9,833.03	79.47			5.12	4.7		0.64
8	100.4		▲ 690	4.15	▲ 11.3	▲ 16.8	8,955.20	77.22			0.52	4.5		0.65
9	99.5	2.6	372	3.01	▲ 11.4	▲ 16.5	8,700.29	76.84	2	4	▲ 10.18	4.2	5.4(-0.2)	0.67
10	101.3		▲ 209	▲ 2.74	▲ 6.3	▲ 10.6	8,988.39	76.77			▲ 5.63	4.5		0.69
11	99.1		▲ 589	▲ 3.06	▲ 5.4	▲ 7.7	8,434.61	77.54			3.85	4.5		0.71
12	101.1	0.3	▲ 147	▲ 6.95	▲ 3.5	▲ 4.8	8,455.35	77.85	▲ 4	4	▲ 8.85	4.5	4.8(-1.0)	0.72
2012.1	101.5		▲ 1390	▲ 8.49	▲ 3.7	▲ 2.4	8,802.51	76.97			▲ 2.56	4.5		0.74
2	101.3		95	▲ 1.95	▲ 1.4	▲ 2.9	9,723.24	78.45			10.41	4.5		0.75
3	101.1	1.2	▲ 1	7.29	6.1	8.8	10,083.56	82.43	▲ 4	3	▲ 0.10	4.5	5.1(-0.4)	0.76
4	100.6		▲ 437	11.13	1.0	2.8	9,520.89	81.49			▲ 7.53	4.5		0.79
5	98.8		▲ 805	11.56	1.8	5.1	8,542.73	79.70			5.08	4.4		0.80
6	98.0	▲ 0.2	112	▲ 1.46	▲ 0.2	2.0	9,006.78	79.32	▲ 1	3	▲ 12.59	4.3	4.6(-1.4)	0.81
7	97.5		▲ 376	▲ 7.45	▲ 6.3	▲ 6.4	8,695.06	79.02			▲ 2.28	4.3		0.81
8	96.1		▲ 664	▲ 5.25	3.0	7.0	8,839.91	78.66			▲ 12.18	4.2		0.81
9	94.0	▲ 0.9	▲ 475	▲ 10.54	0.6	3.4	8,870.16	78.17	▲ 3	2	0.59	4.3	3.9(-1.5)	0.81
10	94.3		▲ 451	▲ 5.98	▲ 1.4	3.2	8,928.29	78.97			6.07	4.2		0.81
11	93.4		▲ 851	▲ 4.04	▲ 0.7	▲ 0.7	9,446.01	80.87			▲ 3.40	4.2		0.82
12	94.7	0.3	▲ 572	▲ 6.89	3.1	4.2	10,395.18	83.64	▲ 12	4	▲ 4.74	4.3	4.4(-0.4)	0.83
2013.1	94.1		▲ 1,480	6.76	▲ 1.2	▲ 4.6	11,138.66	89.18			▲ 10.20	4.2		0.85
2	94.9		▲ 671	▲ 3.31	▲ 3.8	▲ 2.2	11,559.36	93.21			▲ 12.09	4.3		0.85
3	95.0	0.9	▲ 222	0.33	▲ 6.7	▲ 8.6	12,397.91	94.75	▲ 8	3	▲ 19.62	4.1	3.8(-1.3)	0.86

Source: Author's Own Elaboration.

The number of bankruptcies did not rise in the devastated area; rather, the number increased broadly across the country, reflecting the fact that east Japan is a component supplier to Japanese manufacturers as a whole. Thus, the recovery process started smoothly, although structural problems emerged later.

Damage to the local economy of the devastated areas, however, was severe. In addition to the component-manufacturing industries, agriculture, dairy and fishery are also major industries in the region, and farmers and fishermen suffered due to radioactive exposure of their products. Many local crops, vegetables, Japanese tea leaves, beef and fish

were announced to have been exposed to radioactivity exceeding the regulated level, and so shipments were suspended forcibly by the central or local prefectural government until safety could be ascertained.

Even when the ban on shipments was lifted, the farmers and fishermen continued to suffer due to the damaging effects of rumors: consumers would no longer buy food or products that had previously been found to contain radioactivity. These products did not sell well and their prices remaining very low for a long time.

Meanwhile, the fishery industry had a different problem: fishermen lost many facilities ranging from their own ships, processing factories, and facilities such as refrigerators at harbors, to good fishing conditions within harbors. With respect to fishing conditions, the Sanriku coastal area used to have many beautiful, calm inland seas where oysters were cultivated, but these conditions were completely ruined and harbors were filled with the rubble of devastated houses, hindering ships from entering harbors and preventing the cultivation of seaweed, let alone aquaculture of oysters. This situation finally started to recover from mid-2012.

Regarding the macro-economic influence of the earthquake, it brought about two structural changes¹²: namely, the trade balance turned to a deficit, and Japan has been forced to rely on oil as an energy source.

Japan had enjoyed a trade surplus for more than 40 years, but after the earthquake, the nuclear reactors that had generated approximately 30% of total electricity in Japan were stopped, and Japan started to import oil in large volumes, as well as gas and other oil substitutes, thus tipping the Japanese trade balance into the red¹³.

The second economic structural change, namely how to procure energy, is going to become a major problem in the mid to long term, and so electricity saving will be crucial. Looking back on the period from the disaster till the summer of 2011, it is worth mentioning that in the metropolitan area, there were rolling blackouts by area for a couple of hours a day for the first month, and electricity consumption was required to be reduced by a certain rate by government ordinance in the summer of 2011 and 2012. In eastern Japan, saving electricity in those days was very harsh not only for people in general but also for manufacturing industries,

¹² As economic barriers, the high appreciation of the yen in the second half of 2011 was very serious, triggered by the depreciation of the euro following the financial crisis in some southern European countries. This came soon after the disaster, and the strong yen placed serious deflationary pressure on the Japanese economy.

¹³ Currently the trade surplus is in the red and the current account is still in the black because Japan has been enjoying an income surplus.

particularly companies that consumed much electricity, both large and small, which had to adjust their production accordingly.

2.2. Results of the JILPT's Survey

The Japan Institute of Labor Policy and Training conducted a survey by mail of 10,000 companies with 10 employees or more across the country in May 2012, and received responses from 2,716 companies. The main questions concerned the damages caused by the earthquake, the effects of TEPCO's Fukushima Daiichi nuclear power plant accident on production, and countermeasures.

According to the survey results¹⁴, the companies whose headquarters were located in one of the three devastated prefectures accounted for 36.6% of the total. Some 24.5% of companies suffered damage by the earthquake, but the rate differed by type of company: the rate was 48.5% for those with multiple branch offices or factories over the country, and 84.9% for those whose headquarters were located in the three prefectures.

Among the damaged companies, the extent and type of damage were as follows: 42.4% were slightly damaged in general, 35.3% had machinery or equipment partially destroyed in some branch offices, 14.1% had buildings half destroyed in some branch offices, and 3.6% lost employees in some of their branch offices or factories (Table 3).

Table 3. Extent and Type of Damages (No. Of Damaged Companies = 100).

	All damaged companies	Employees died or wounded in some offices or factories	Buildings were completely destroyed in some offices or factories	Buildings were half destroyed in some offices or factories	Machinery or equipment was completely or considerably destroyed in some factories	Machinery or equipment was partially destroyed in some factories	Slightly damaged in general	Others	N.A.
Total	100.0	3.6	8.4	14.1	11.3	35.3	42.4	3.3	1.2
Iwate pref.	100.0	4.5	18.2	11.4	18.2	40.9	29.5	9.1	0.0
Miyagi pref.	100.0	6.5	14.4	20.9	14.4	34.2	39.2	1.9	0.4
Fukushima pref.	100.0	3.3	6.6	18.7	16.5	35.2	35.2	5.5	1.1

Source: Author's Own Elaboration.

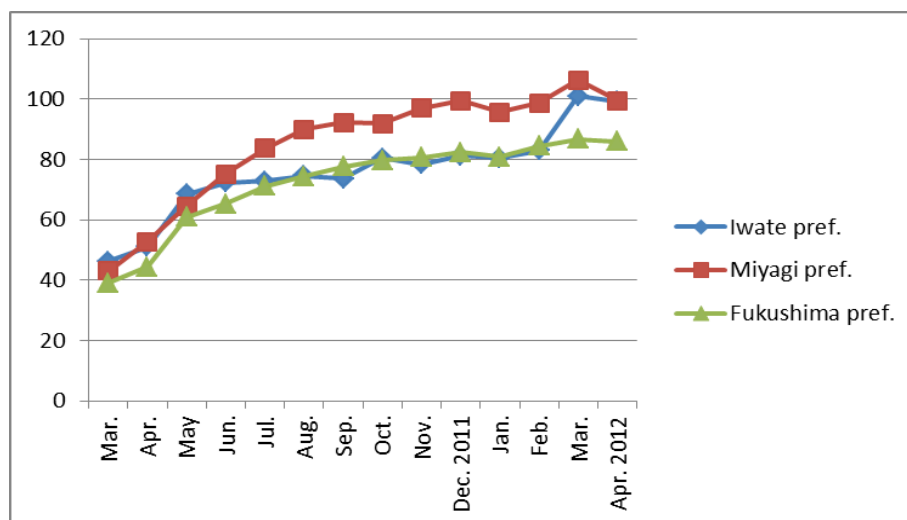
¹⁴ The survey responses were translated by the author; any mistakes are my responsibility.

The questionnaire asked the damaged companies about the effects on the production of the company as a whole or at the most damaged branch office or factory, and the responses were: 25.6% of the damaged companies were “not affected as a whole”, 26.7% “suffered from temporary production reduction”, 35.9% for “temporary suspension”, and 8.4% eventually “abolished the company or branch office concerned”.

As for the level of production among the respondents answering “temporary production reduction” or “temporary suspension”, it was around 40% on average compared to one year ago in each of the three prefectures of Iwate, Miyagi and Fukushima as shown in Figure 1. The figure rose to 90% in Miyagi around August 2011, but the recovery was delayed in Iwate and Fukushima. The situation then recovered to some extent in Iwate around March 2012, but remained at a lower level in Fukushima (Figure 1).

To the same companies that “temporarily reduced” or “suspended production”, we asked whether workers were made redundant or not. As Table 4 shows, workers were temporarily made redundant in 44.0% of those companies, and in the other 3.1% of companies, workers are still redundant, whereas in 46.7% of the total, workers did not become redundant after the recovery started. If we compare the tendency throughout Japan with that in the three devastated prefectures, however, it is clear that there were more worker redundancies in Iwate, and that redundancy persists in some companies in Fukushima, whereas it was not serious in Miyagi.

Figure 1. Production Level of Companies that Temporarily Reduced Production in the Three Devastated Prefectures (Index Averaged For Each Prefecture with 2010 = 100).



Source: Author's Own Elaboration.

Table 4. Incidence of Redundant Workers in Those Companies that Temporarily Reduced or Suspended Production.

	Total	No redundant workers after recovery	Temporary redundancies but no more now	Redundant workers still exist	No choices are applicable	N.A.
Total	100.0	46.7	44.0	3.1	4.9	1.3
Iwate pref.	100.0	27.8	61.1	0.0	11.1	0.0
Miyagi pref.	100.0	50.0	45.1	2.0	2.0	1.0
Fukushima pref.	100.0	33.3	48.5	9.1	6.1	3.0

Source: Author's Own Elaboration.

Concerning countermeasures against redundancy, we asked those companies where workers had become redundant plus those that had been closed as to what kind of measures they had taken (multiple answers): 54.4% of workers were left “idle on a temporary basis at home or training site”, followed by “rotation to other section inside the company” (27.9%), “reduction of overtime” (18.4%), and “reduction of scheduled working hours” (16.2%). More severe measures were “stopped renewing contracts of fixed-term workers” (9.6%), “induced retirement” (5.1%), “dismissal” (5.1%) or “delayed employment of new recruits” (5.1%), but the incidence was rare.

As regards problems arising from the accident at TEPCO's Fukushima Daiichi nuclear power plant, apart from the direct impact of radioactive exposure, we asked about indirect impacts on production; the responses are shown below (Table 5). "Nothing in particular" (52.9%) is the largest, but some companies suffered from impacts such as: "considerable decrease in sales caused by reduced consumption after the disaster" (21.4%) or "production reduction due to planned blackouts or saving electricity" (12.6%). The situation differed from industry to industry and from region to region. In the tertiary industry such as hotels and restaurants, life-related services, or leisure, the ratio of those that suffered from "considerable decrease in sales caused by reduced consumption after the disaster" exceeded 40%, and "production reduction due to planned blackouts or saving electricity" was relatively high at around 20%. In hotels and restaurants, "considerable decrease in sales caused seemingly by damaging rumors" was also high (24.7%). In contrast, "production reduction due to planned blackouts or saving electricity" was relatively high in manufacturing industries (17.0%), reflecting the nature of production activities.

Among the three devastated prefectures, the ratios of "considerable decrease in sales caused by reduced consumption after the disaster" and "considerable decrease in sales caused seemingly by damaging rumors" are relatively high.

Table 5. Indirect Impacts on Production other than Radioactive Exposure (M.A.).

	Total	Production reduction due to planned blackouts or saving electricity	Sales fell considerably caused by reduced consumption after the disaster	Sales fell considerably caused seemingly by damaging rumors	Others	Nothing in particular	N.A.
Total	100.0	12.6	21.4	6.4	7.7	52.9	9.0
Agriculture and forestry	100.0	11.1	22.2	11.1	-	66.7	-
Fishery	100.0	-	16.7	16.7	-	66.7	16.7
Manufacturing	100.0	17.0	20.1	4.6	9.1	50.2	9.1
Retail	100.0	21.5	20.6	10.8	8.5	47.5	5.8
Hotels and restaurants	100.0	25.3	47.5	24.7	4.3	22.2	9.3
Life-related services	100.0	18.5	44.4	11.1	7.4	38.9	5.6
Leisure	100.0	25.8	41.9	6.5	3.2	29.0	9.7
Three devastated prefectures	100.0	12.7	24.6	16.7	8.7	47.6	4.0
Tohoku region	100.0	13.0	28.7	12.6	7.3	47.0	6.1

Source: Author's Own Elaboration.

In relation to the impact of the planned blackouts and electricity saving on production, it was large in some big companies. Table 6 shows that the

majority of companies (61.0%) were “not greatly affected”, but some (10.3%) were “greatly affected in some offices or factories”. It is also notable that some companies (16.8%) “did not save electricity and production was not affected.” If we compare the data across the regions, the magnitude of the impact of saving electricity in the three devastated prefectures hardly differed from other prefectures, and in Tohoku as a whole, the ratio of greatly affected companies was smaller than the average.

Table 6. Impacts of Saving Electricity in The Summer Of 2011.

	Total	Greatly affected in some offices or factories	Production was not greatly affected	Not affected because could generate own power	Did not save electricity and production was not affected	No choices are applicable	N.A.
Total	100.0	10.3	61.0	0.8	16.8	4.4	6.7
Three devastated prefectures	100.0	6.3	65.1	0.0	22.2	4.8	1.6
Tohoku region	100.0	4.5	69.2	0.4	18.6	2.8	4.5

Source: Author’s Own Elaboration.

Finally, we asked what the companies had done to assist the recovery and restore the devastated areas. “Money donation” (63.0%) was the most common activity; 23.5% of the companies did not do anything special, but some companies took action such as sending supplies to victims (25.9%) or sending a volunteer rescue team from among employees (6.4%), and 7.0% allowed employees to take paid leave to do volunteer work in a devastated area (Table 7).

Some companies reportedly planned to employ victims as a priority, especially new graduates from universities, but according to this survey, such efforts were limited (4.6%). The majority of the companies (70.0%) had no such policy, and 6.7% of the companies tried to employ such persons but without success (Table 8).

Table 7. Companies' Assistance for Victims and for Restoration (M.A.).

	Total	Sent supplies to victims	Sent a voluntary rescue team recruited from the employees	Permitted paid leave when employees volunteered to work in a devastated area	Money donation as a company activity	Others	No special activity	N.A.
Total	100.0	25.9	6.4	7.0	63.0	4.3	23.5	2.1
Size of companies								
below 100	100.0	17.2	2.5	2.6	54.0	4.0	32.3	2.6
100~299	100.0	24.3	3.4	6.1	69.8	4.0	19.7	1.1
300~499	100.0	30.9	9.6	8.5	70.6	4.3	15.2	2.5
500~999	100.0	35.4	11.1	15.5	76.5	5.3	10.2	0.9
1,000 and over	100.0	58.3	23.3	21.7	78.0	6.0	5.0	2.3
Three devastated prefectures	100.0	36.5	9.5	3.2	31.0	4.0	36.5	3.2
Tohoku region	100.0	34.8	8.1	6.5	42.1	4.5	32.0	3.6

Source: Author's Own Elaboration.

Table 8. Prioritized Employment of Local Victims as Company Policy.

	Total	Employed local victims as a priority	Tried to employ victims as a priority, but was not possible	Had no policy of prioritized employment	No employment after the earthquake	N.A.
Total	100.0	4.6	6.7	70.0	12.2	6.6
Three devastated prefectures	100.0	15.9	5.6	57.9	11.1	9.5
Tohoku region	100.0	12.1	5.7	58.3	14.6	9.3

Source: Author's Own Elaboration.

3. Local Labor Market Situation

3.1. Overview

For the first several months after the disaster, many local people in the devastated areas were unemployed or lost their jobs because the companies they worked for were destroyed by the tsunami, facilities and equipment were severely damaged and could not be used, or because the workers themselves had to evacuate from their hometown. Faced with this situation, as an initial emergency measure immediately after the disaster, the government eased the eligibility requirements for both

unemployment benefits¹⁵ to be paid to such people and for subsidies to be paid to employers to maintain employment, and also doubled the duration for which unemployment benefits could be claimed.

The situation greatly improved as the government and local municipal governments started the reconstruction effort. Many jobs were created for construction or removing rubble from the sea or along roads. However, manual work is no longer so common and few people applied for those jobs, leading to localized labor shortages that further delayed the restoration process in the devastated areas.

In Fukushima, people could not take up new jobs easily in the towns to which they evacuated for different reasons. Some of them moved away from Fukushima for their children's health, safety and education, or for their own job opportunities, but did not clearly know how long the situation would continue, and so felt reluctant to take a permanent job, and instead tended to take temporary jobs or remain at home. This choice may have been possible partly because they received some compensation for living from TEPCO.

3.2. The Labor Market in Iwate, Miyagi and Fukushima after the Disaster

This section examines the labor market situation in the three devastated prefectures after the disaster. The data used in this section was taken from job-exchange activities in local public job exchange offices, the so-called "Hello-Work Offices", which were collected by the government. Job-openings, job seekers, and new employment are mainly analyzed here¹⁶.

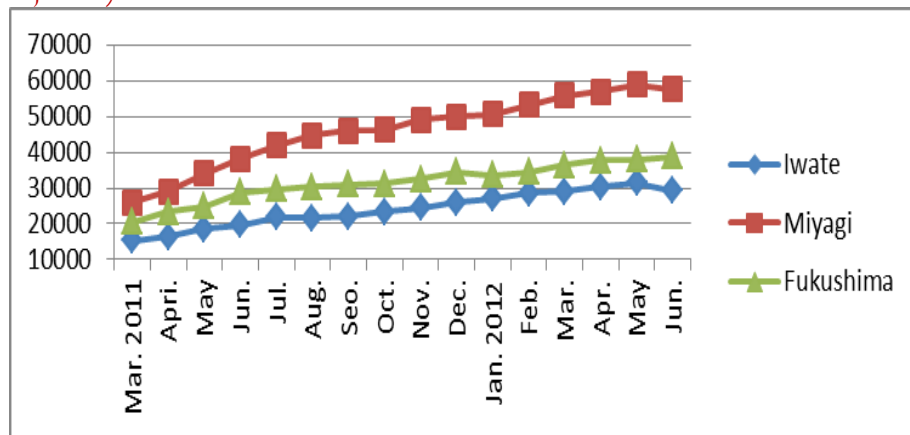
New job openings increased greatly in each of the three prefectures after the disaster, boosted by the demand for restoration-related activities (Figure 2). On the other hand, job applicants increased dramatically in the first quarter immediately after the disaster, because many people were laid off or their workplace had been destroyed or closed temporarily because the owner or president was missing. As noted above, the government

¹⁵ Under the employment insurance law of Japan, recipients must clearly have been dismissed or become unemployed; those who are merely idle because it is not certain whether their workplace will resume operation are not eligible for unemployment benefits. However, this regulation was inappropriate at the time in view of the chaos and disruption to business, so the government decided to ease the regulations immediately.

¹⁶ Unemployment is another important labor-economic indicator, but unemployment data are not available by prefecture in Japan due to the way statistics are administered; the region is the smallest unit for which unemployment data is available. Since the data could not be extrapolated, the data shown here are for between March 2011 and June 2012.

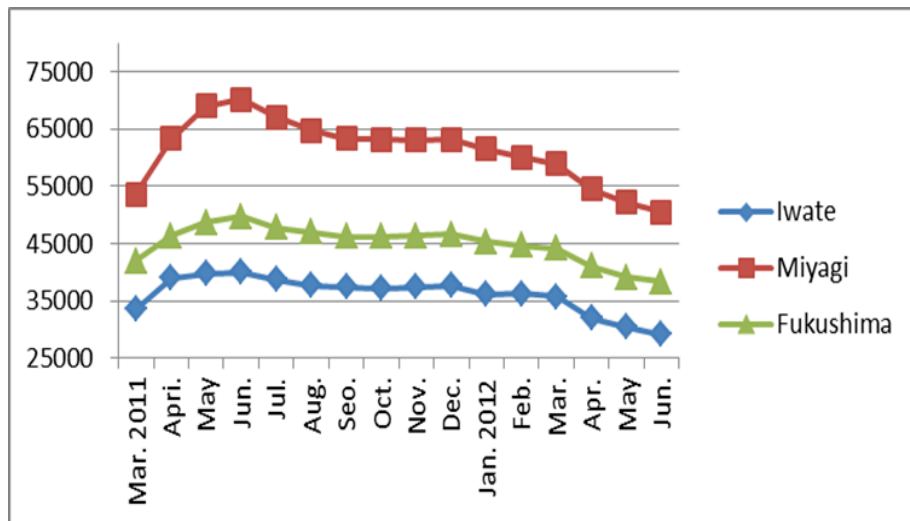
eased the requirements for eligibility for unemployment benefits, and also changed the employment insurance law to prolong the duration of unemployment benefits, thus leading to a surge in the number of unemployment benefit recipients (Figures 3 & 4).

Figure 2. Trend of Job Openings in the Three Prefectures (seasonally adjusted).



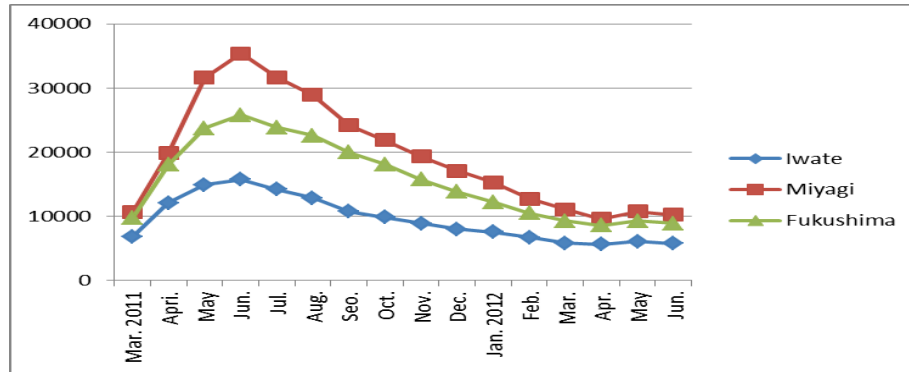
Source: Author's Own Elaboration.

Figure 3. Trend of Job Applicants in the Three Prefectures (seasonally adjusted).



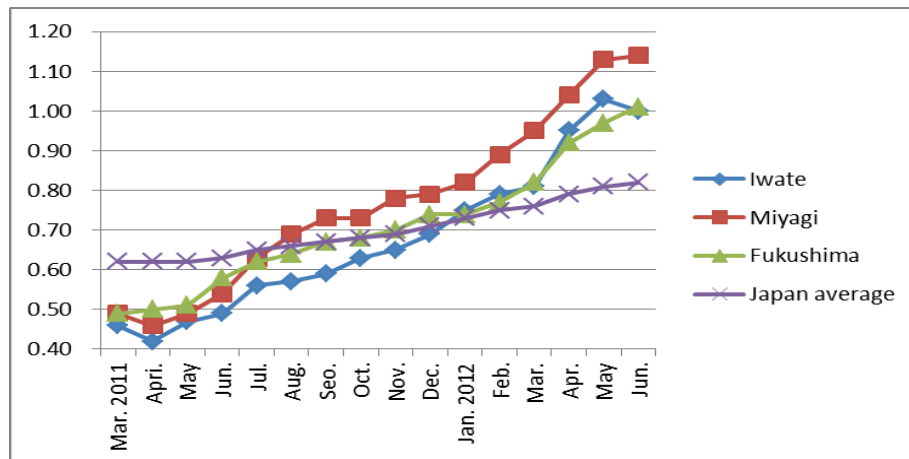
Source: Author's Own Elaboration.

Figure 4. Trend of Unemployment Benefit Recipients in the Three Prefectures (non- seasonally-adjusted).



Source: Author's Own Elaboration.

Figure 5. Ratio of job openings to job applicants in the three prefectures (non-seasonally-adjusted).



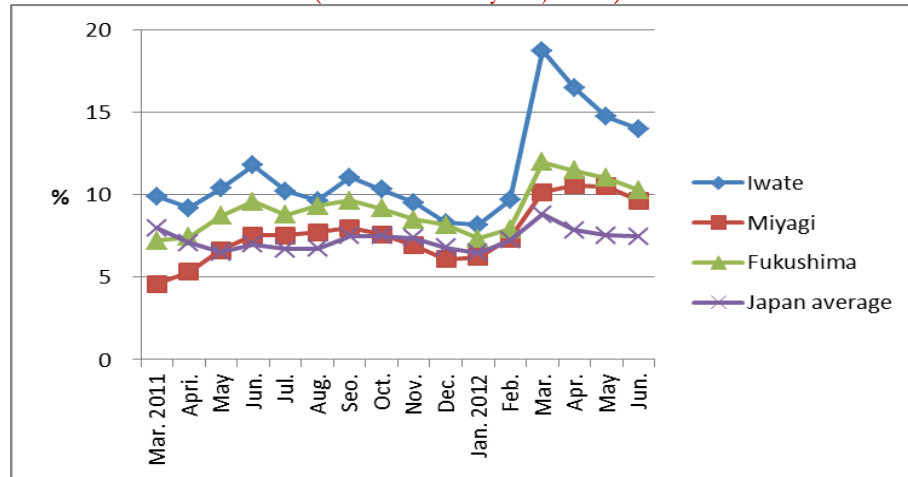
Source: Author's Own Elaboration.

As a result, the ratio of job openings to job applicants dropped in the three prefectures and was lower than the average for Japan for the first three or four months, but the ratio quickly improved and surpassed the national average by around January 2012 (Figure 5).

Concerning new employment, Figure 6 shows the rate of the number of newly employed out of job applicants in the three prefectures compared with the national average. It can be seen that the ratios for Iwate and Fukushima are always higher than the national average, and likewise for Miyagi since March 2012. In addition, there is a notable upsurge around

March 2012, which may have been because the extended duration of unemployment benefits ended for most recipients around this time, so they tried to get a job before such benefits ended.

Figure 6. Rate of the Number of Newly Employed out of Job Applicants in the Three Prefectures (non-seasonally-adjusted).



Source: Author's Own Elaboration.

The employment situation in the devastated three prefectures has not been so bad in general, but as noted above, if broken down by sector or area, the situation was difficult or recovery was slow in industries such as fishery, dairy and agriculture, or in areas with a concentration of such industries.

4. Government Measures for Recovery and Restoration

4.1. Overview

Immediately after the earthquake, the government was fully involved in searching for missing people carried away by the tsunami, helping evacuees evacuate safely including the provision of emergency food and collection of donations, and maintaining the stability of the nuclear power reactors of the Fukushima Daiichi nuclear power plant of TEPCO. However, from mid-April 2011, the government started to work on restoration by establishing a special committee for restoration; the basic principle for the restoration was approved by the Cabinet at the end of July 2011.

Moreover, the government compiled a supplementary budget for restoration¹⁷ four times in fiscal 2011 (April 2011 to March 2012)¹⁸.

The first supplementary budget plan was approved by the Diet very swiftly in early May 2011, focusing on temporary housing, removing debris, and public works for recovering from the disaster.

The largest supplementary budget was the third one, approved by the Diet at the end of November 2011. This budget amounted to 9.2 trillion yen, and the main target of government expenditure shifted at this stage from emergency measures to grander design-based expenditures. As noted above, municipal governments that had been damaged by the tsunami and earthquake were requested to draw up comprehensive designs for restoring the devastated area, both residential and industrial, and to submit their plans to the government. Once a plan is approved, then subsidies will be paid to the municipal governments from the national budget. The projects may differ in content among municipal governments, but for reconstructing infrastructure, actual projects have been summarized for municipal governments to choose in an integrated format across 40 different reconstruction projects, which have been arranged by the five authorized ministries. This third supplementary budget included assistance to small- and medium-sized damaged companies and measures to promote employment in the devastated areas. Regarding the scale of total budget expenditures, the former administration, the Democratic Party, decided to spend 19 trillion yen in total, which was raised to 25 trillion yen by the current coalition government, the Liberal Democratic Party and the New Komeito. It was recently reported, however, that about 35% of the budget for fiscal 2012 was not spent for various reasons, largely because of delays in submitting comprehensive restoration plans to the government, delays in radioactive decontamination work in Fukushima, and shortages of manpower and materials for public works for restoration.

4.2. Problems Facing Local Municipal Governments and Citizens

In addition to the management of the nuclear power plant, the whole restoration process has been delayed in many areas, particularly: (1) the

¹⁷ Under the Japanese budgetary system, once a budget is set, if some public necessities arise during the fiscal year (April to the end of March of the following year), supplementary budget(s) may be drawn up to deal with such necessities.

¹⁸ This was the first time since 1947 that the Japanese government compiled a supplementary budget four times in one year.

delay in radioactive decontamination of soil so that evacuees from Fukushima can return home, (2) procurement of candidate places to store incinerated debris from Fukushima, and (3) the construction of public housing for those still living in temporary housing¹⁹.

Regarding (1), the government decided to remove the topsoil in residential areas in Fukushima to reduce radioactive contamination and encourage evacuees from Fukushima to return home to live normal daily life. However, the decontamination process has been delayed because of the lack of manpower. In addition, the method has been inefficient at reducing radioactive contamination, and so the government is studying more effective ways.

Regarding (2), dealing with debris has been one of the Government's important policies, because debris left in local areas hinders and delays the restoration. The government requested other prefectural governments to cooperate by voluntarily receiving debris from the devastated prefectures and incinerating it, but this has been difficult from the outset. In particular, few municipal governments agreed to accept debris from Fukushima because of strong opposition by local citizens to the governor's request. As a result, the government requested several municipal governments near the nuclear power plant to accept debris from inside the prefecture, incinerate it, and temporarily store it within the municipal city/town area, subject to the condition that the burnt debris will be taken away within 30 years to outside the prefecture.

Finally concerning (3), the construction of public housing has been delayed due to the difficulty in finding good candidate sites, amid time-consuming controversial discussions among citizens for future comprehensive designs²⁰ for towns, and partly due to the shortage of manpower for construction.

¹⁹ About 210,000 evacuees are still living in temporary housing, with 5% moving to newly built public housing.

²⁰ Taking the construction of high seawalls as an example, such plans have been approved in some towns and villages, but rejected in others due to scenic damage.

5. JILPT Research Project to Document the Great East Japan Earthquake: The Interim Report

5.1. Scope of the Project: Seven Research Teams and their Activities

The Japan Institute of Labor Policy and Training has been conducting a documentation project since April 2012²¹, which started with voluntary proposals from various researchers of the Institute; the study was not requested by the government or arranged by the Institute. All of the proposals have been finally approved as formal research activities of the Institute, and have been implemented by seven teams as outlined in the table below.

JILPT's Documentation Research Project.

Team	Target of research	Visits to disaster areas
1	To collect information from newspapers and analyze statistical data	× (=desk work only)
2	To implement a survey of companies and analyze the results	× (=survey+ desk work)
3	To have interviews with officials of the prefectural labour bureaus concerned	○
4	To have interviews with heads and technical staff, and when possible, trainees of the local vocational training centers	○
5	To visit an employers' federation and national trade union confederations for interviews	× (visit the organizations in Tokyo only)
6	To visit local municipal governments, NGOs or private job placement services for interviews in relation to: (1) temporary job creation subsidy and (2) contribution by job placements	○
7	To interview local municipal governments for restoration projects	○

²¹ It may look too late to start the project. This is due to our Institute's budget system; the budget starts in April and ends in March; to start a new research project, we need to report to and receive approval from the Ministry of Health, Labour and Welfare in advance. Therefore, it was not possible to start this project at the beginning of April 2011.

The first publication from this project was my report under Team 1 issued in October 2012. The report was composed of two parts: daily information collected from two Japanese newspapers from March 12, 2011 to March 31, 2012²², and an analysis of data published for the same period including economic indicators, population surveys published by the three prefectural governments, and disaster reports from the government. Last March 2013, at the end of fiscal 2012, two more reports were published: an interim report of the research activities of Teams 1 to 6, and a more detailed report from Team 4.

In the second fiscal year, which started in April 2013, a report of Team 7 was published on the web last July, and two more reports were published by Teams 2 and 3 last August. The latter two reports are: a detailed report of the JILPT survey results (Team 2) the contents of which were outlined in Chapter 2, and a detailed report of interviews with local labor bureau officials (Team 3). As of September 2013, Teams 4, 6 and 7 are still conducting research; the other teams have finished.

5.2. Main results

The research activities of Team 2 (the JILPT's survey in 2012) were outlined in Chapter 2 above, and the main achievements of Team 1 form the basis of this paper. This section outlines the main results of Teams 3, 4 and 5.

(a) Interviews with Local Labor-related Organizations

i) Prefectural Labor Bureaus

Researchers of Team 3 went to visit the three prefectural labor bureaus of Iwate, Miyagi and Fukushima, and some Hello-Work offices and labor standard inspection offices, all of which are controlled by the prefectural labor bureau concerned.

The researcher noted in Chapter 3 of the interim report that Hello-Work officers met affected people not in the Hello-Work office but at their temporary houses, and provided job advice there as part of the government's assistance to victims. Many unemployed people were concerned about searching for work; some visited more than twenty

²² Information on main incidents from April to July 2012 was included in the report.

employers for a job interview but had not yet got a job. He also noted that some local people were discouraged to work and stayed in their temporary houses all day, and that others were desperate and turned to alcohol because of the complete change in their living environments.

As a policy tool, the researcher referred to a temporary job creation subsidy²³ utilized in the devastated area, and introduced the local situation, particularly in the early stage, when the subsidy was used for creating temporary jobs such as clearing debris, baby-sitting, or visiting and caring for elderly people in temporary houses, and clerical work as assistants in municipal governments.

As for the local labor market and business activities, the researcher pointed out that the labor market for construction was very tight with government expenditure focusing on restoration, that the recovery was generally taking time in fishery, and processing and marine-product manufacturers, and that there was a labor shortage in these companies because very few workers had returned. Regarding wages in local labor markets, he mentioned that the wage level of new job openings was high for construction, but wages for fishery, processing and marine-product manufacturers were far lower than for jobs created by the temporary job creation subsidies, thus preventing local people from returning to work for the local fishery industry.

Finally, he noted the government's achievements in using the national Hello-Work network to gather new job openings throughout Japan and introduce them to job applicants who had been affected by the earthquake.

ii) Local Vocational Training Centers and Polytechnic Colleges

Team 4 visited vocational training centers and some polytechnic colleges in the Tohoku region, and interviewed the staff, and trainees where possible. In my view, among the research teams of this documentation project, this team described most vividly the difficulties these local people encountered, how they felt about it, and how they tried to overcome them.

In Chapter 4 of the interim report and another detailed report, the researchers noted that many trainees and staff behaved in a very orderly manner and evacuated safely when the disaster occurred; most of them

²³ As introduced below, the subsidies are being studied by Team 6, too, as a Cash-For-Work study, focusing on the situations in which the subsidies were used and their effectiveness in generating employment.

had already experienced other big earthquakes. The researchers also pointed out that regular training was generally very useful to ensure orderly behavior in such an emergency. However, one problem was that the training assumed a fire disaster, not an earthquake or tsunami, and did not cover how to secure evacuation routes through fallen objects, or how to deal with flooding of a site; these issues as well as broken transportation infrastructure must be addressed in the future.

The importance of developing curricula for emergencies was noted, and two technical training courses were proposed in the report: namely how to operate heavy machinery to deal with debris, and how to remove topsoil to reduce radioactive contamination.

(b) Interviews with the Japan Business Federation, the Japanese Trade Union Confederation and others about their Volunteer Activities, and Other Analyses

Team 5 visited the Japan Business Federation (Keidanren), and national trade union confederations (Rengo and Zenroren) to hold interviews to collect information on their activities for assisting the devastated areas. The results were compiled in Chapter 5 of the JILPT interim report, and were reported in a bulletin of the Institute, too.

The interim report noted that both the employers' federation and trade union confederations carried out various volunteer activities based on their experience of the Kobe Earthquake, in addition to donating money. Keidanren requested business associations at the industry level to send relief goods, food, and volunteer teams to local devastated areas, and also asked them to carry out their own relief activities, while Rengo and Zenroren each sent volunteer teams. Keidanren also carried out a survey to ask its member companies about their relief activities.

The team also analyzed the impacts of the earthquake on annual wage agreements and on saving electricity in business activities. Regarding wages, the earthquake struck at almost the same timing as the negotiation period; in Japan, employers and labor unions at the central level start to discuss the wage increase for upcoming fiscal year normally at the beginning of each year and collectively conclude their negotiations around the middle of March. Immediately after the earthquake, the trade unions faced the negotiations very flexibly, leaving each industry to make decisions, and in some industries, they postponed or froze the negotiations.

After April 2011, both sides returned to relief work in earnest.

(c) Research for Job Creation in the Devastated Areas by using a Governmental Job Creation Fund (Cash-for-Work Study)

This is a study being implemented by Akiko Ono, who is going to attend a seminar in Sendai in late November. In her presentation, she will describe her research, and in particular, her findings regarding the special government subsidy and its policy appraisal. For details, refer to her paper and presentation on the day.

The subsidy is one of the government's policy tools for generating local employment, with a fixed amount of funds for each prefecture. The government introduced this scheme about five years ago. The main policy target of the scheme has been expanded to include not only employment promotion in the regions devastated by the earthquake but also some other policy targets. The original idea of the government to promote local employment through funding was first introduced about a decade ago when Japan was suffering after the bursting of the IT bubble. In those days, the government sought to create jobs for middle-aged dismissed workers or new graduates from universities. This government experience in the past worked well to improve the situation after the earthquake.

6. Lessons Learned from the Disaster: A Personal View

This paper basically describes what happened during and after the disaster, and raises few policy implications mainly because I have no expertise in this field. In this final chapter, to promote the exchange of opinions and experience in the seminar between the invited guest speakers and the Japanese side, I will focus on the following three subjects based on my research: (1) a practical lesson drawn from all materials that I referred to in my research, (2) two recent changes in Japanese society that I have noticed since the disaster, and (3) comments on the delay in the restoration process.

(1) Practical Lesson: the Importance and Effectiveness of Disaster Training

One practical lesson of the disaster is the importance of regular disaster training: training in offices, schools and local society for things such as evacuation, initial response, and assistance to affected people.

A medical doctor who was working at a hospital in the heart of Ishinomaki, one of the most heavily devastated cities of Miyagi, wrote a

book [reference 5] after the disaster and noted that regular in-house training at his hospital on disaster evacuation and management of medical care proved to be very helpful. In particular, his hospital now holds training together with other related organizations in the local area, including the municipal government. He wrote that such training was useful: the evacuation operations worked cooperatively, efficiently and smoothly through face-to-face relationships. I also believe that such disaster training worked very well after the disaster because all the doctors, nurses and other medical coworkers instantly knew what they had to do quickly for patients and local people, and the hospital played an outstanding role even in such an extreme situation.

In the book, the doctor also described his own experience as a disaster medical coordinator appointed by the Miyagi prefectural government, to “manage” the activities of medical doctors’ teams who came to the hospital from around the country to serve as medical volunteers. First, he walked around the city to find out in roughly which areas patients remained without care and to assess the conditions of the patients. He then gave this information to the doctors’ teams, and did not manage anything. Instead, he left it to each team²⁴, with different medical expertise, to decide which area to visit and what medical care to give, but asked the teams to make a report about where they went and what they did. The point is that the doctor himself did not try to manage the entire operation of the center; instead, he left it to the judgment and medical treatment of each professional team.

The doctor recollected in the book that it was a major challenge for him and each doctors’ team as well, but he seemed to successfully avoid the chaos that could have occurred had he tried to control everything by himself, such as the schedule and areas to be visited by the doctors’ teams. The performance of his effort amid the disaster is worth studying in more detail.

Finally, for reference, the Tokyo Metropolitan Government implemented major disaster training on a weekday in February 2012 around the three large railway stations of Tokyo, Shinjuku and Ikebukuro, assuming that huge numbers of evacuees could not return home because transportation

²⁴ This reminds me of another reference [4] which discussed the so-called one-to-one cooperation principle practiced by the Chinese government after the Great Shisen Earthquake in 2008. According to this book, the Chinese government established the principle that the provincial governments around Shisen Province should enter and assist specific areas of Shisen province in their own way with full responsibility, and that no other assisting province should duplicate the same activity for the same area.

services had broken down, and many people participated in the training. The training considered the fact that over three million people could not return home and had to stay in Tokyo after the Great East Japan Earthquake. According to the world history of massive earthquakes, another major earthquake is likely to occur in the next five years, so this kind of training for citizens is essential.

(2) New Social Phenomena after the Disaster

I have noted various new social phenomena in Japan since the disaster, and the following three phenomena in particular. I also include another reference at the end, which has a legal rather than a social aspect.

First, after the disaster, many municipal cities and towns exchanged partnership agreements for mutual assistance and cooperation in case of a disaster. Although such mutual cooperation was common among businesses for component supplies or substitute production, after the disaster many municipal cities exchanged partnership agreements. I hope this will provide good security and function effectively.

Second, volunteer activities are becoming more common in Japan among both individuals and companies, as well as helping the victims after the Great East Japan Earthquake. In fact, since the disaster, various natural disasters such as typhoons, floods and tornados have hit many places throughout Japan amid global warming, and there have been many volunteer activities in those areas. There is a growing tendency among companies, too, to introduce paid leave for volunteer activities by their employees.

Finally, through this dreadful experience, many Japanese people have learned more about the history of great earthquakes that struck Japan in the past. The Great East Japan Earthquake was indeed an unprecedented catastrophe for all Japanese people, but it is also true that large earthquakes frequently hit the Tohoku region in the long term such as one century. After the disaster, some local people said that their ancestors had warned them not to build houses below a certain altitude, based on their ancestors' experience of being hit by huge tsunami that caused many deaths, but that they had forgotten this lesson over a long period.

Finally, I wish to add a comment regarding a legal aspect. When policy makers and government officials discuss new policy issues, they often

refer to “special zones²⁵” nowadays. This tendency has become more common during arguments on restoration policy since the earthquake. In principle, it is reasonable to utilize the “special zone” scheme for restoration because geographic and natural conditions, ways of living, and preferences of local citizens for restoration priorities vary from area to area. However, some policy makers and government officials now wish to try applying special zones to other fields such as labor law. Theoretically, such a possibility may be worth considering; legislation could be made to cover a specific area “as a trial” for various reasons, and to judge, based on “experiments”, whether it should be introduced throughout the country. However, all people should be equal before the law, and laws should likewise be applied to the whole of Japan. If trials are conducted because something seems too difficult to start by legislation, I believe it would constitute a misuse and wrong understanding of the special zone system. I am deeply concerned about the future of the special zone system.

(3) Comments on the Delay in Restoration

Among the huge earthquakes in Japan’s history, the Great Kanto Earthquake which hit the Tokyo area in September 1923 stands out: Tokyo, especially its eastern part, burned to the ground with over 100,000 deaths²⁶.

At that time, Shimpei Goto, a well-known statesman and once a mayor of Tokyo city, took a very strong leadership in the restoration of Tokyo as a senior minister in the Cabinet. Particularly impressive was the speed with which he drew up the restoration plan²⁷, and more importantly, his grand design for arterial roads through the city, with public parks and wooded

²⁵ This is a governmental scheme to apply a policy exclusively to a special zone or to a case which happens in the special zone by designating the zone by a law or government scheme. The concept of special zones was introduced in Japan about a decade ago when the government was struggling to promote deregulation and structural reform of the government. In the fields covered by the Ministry of Health, Labour and Welfare, this policy of designating special areas was not uncommon; before 2000, the Ministry often designated areas to pay special subsidies to employers in certain industries, for example, although these were not called “special zones”.

²⁶ Learning from the past and in preparation for the future, the government organizes disaster training every year throughout Japan on one day in September.

²⁷ According to historical materials, his restoration plan faced strong opposition from business groups and landowners, and its budget was considerably reduced.

areas, provided the structural foundation that still functions in Tokyo today.

As the restoration process was delayed last year, I thought it was due to the bureaucratic paperwork demanded by the central government of municipal governments, compared with the swift restoration of Tokyo in a top-down manner after the Great Kanto Earthquake. As many municipal governments lacked manpower skilled in civil and urban engineering, the delay is attributable mainly to technical paperwork. It is also true that the government needs to learn from this earthquake and study more efficient and much easier procedures for future disasters.

During my research, I have found differences between the Great East Japan Earthquake and the Great Kanto Earthquake. The former hit a much wider area, and restoration is underway in many different cities with different socio-economic backgrounds. Another major difference is that people in general were equally poor in the old days in Japan, and the government had strong sovereignty, whereas economic development has caused disparities among people, and people are well aware of their rights now. Infrastructure cannot be the target of restoration planning alone; the whole restoration process requires adjusting different interests among landowners, residents and public interests, which is time-consuming.

For the next time, therefore, I propose studying the restoration process through two stages. The governments, both central and municipal, should identify those processes that will require a long time to deliberate and study, and those which may not. For the latter group of restoration, the governments should identify barriers in the current system, including outrageous amounts of procedural paperwork. At this first stage, the central and municipal governments as a whole quickly study the basis of the infrastructure reconstruction scheme for which they already have 40 different options. Municipal governments should also report to the government on how they handled the procedures, what they felt about their usefulness, and the difficulties and problems to be improved.

On the other hand, the former part of the restoration process may take a long time because legal adjustments among landowners, residents and public interests are not easy; changes in government procedures and the legal system will be necessary to overcome the difficulty. The central government, therefore, should start by listening to municipal governments to learn about the difficulties they faced or are facing now regarding restoration, what issues remain unsolved, and identify what legislation or governmental regulation acts as barriers, and then take time to study changes in the legal system to induce land supply for restoration after a disaster.

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²⁸ Translation of the reference titles here is all of my own; any mistakes should be attributed to me.

Results of an Analysis of Personal Questionnaire Surveys on the Great East Japan Earthquake: Income, Workplace, Daily Living, and Health¹

Hiroshi Yoshida ·

More than two and a half years following the Great East Japan Earthquake, it has become time to summarize “what the disaster brought to our society” as reconstruction continues. This paper considers lessons to be gleaned in preparation for a feared “massive earthquake of the future” from the results of questionnaire surveys of individuals living in areas afflicted by the recent disaster, the Tokyo metropolitan area, and throughout Japan that were conducted by Tohoku University’s Yoshida Laboratory. Results here cover activities on the day of the earthquake,

¹ Research on study conducted based on this report (Study A) received a subsidy from the Ministry of Health, Labour and Welfare’s Grant-in-Aid for Scientific Research scheme title “*Higashi Nihon Daishinsai-to ni Yoru Iryo-Hoken Bunya no Tokei Chosa no Eikyo ni kan-suru Kodo Bunseki to Hyoka-Suikai (H24-Tokei-Ippan-002 (Fukko))*” (advanced analysis and evaluation/estimates on the effects of the Great East Japan Earthquake, etc., on statistical surveys in the medical and health care fields). Study B received a subsidy from an East Asia project of Tohoku University’s Graduate School of Economics and Management/Faculty of Economics.

(<http://www.econ.tohoku.ac.jp/econ/strategy/RS/sub5/sub5.html>, *Higashi Ajia Choki Jizoku-teki Seicho no Keizai Shisutemu Kagaku Kenkyu Kyoten no Keisei to Tenkai* [formation and development of bases for research on economic systems science for long-term sustainable growth in East Asia]).

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health, impact on daily living (housing, income, human relationships, etc.), expectations for government, awareness of radiation, changes in thinking vis-à-vis disaster management, and the people most depended upon.

1. Introduction

1.1. Motivation

In Yoshida (2013a), a research group that included the author accumulated official government statistics on medical care, health care, and welfare in areas afflicted by the Great East Japan Earthquake for the times before and after the disaster and compared them. This was done to ascertain the health status of residents in the afflicted areas given the passage of two years following the disaster. The results clearly showed a high probability that currently obtained official statistics cannot be directly linked with needs for medical and welfare services and the actual mental health circumstances of residents. Problems with official statistics that were identified from Yoshida (2013a) are as follows:

(1) Statistically, Medical Care Expenses, Numbers of Patients, and Demand for Nursing Care Insurance have been Decreasing In the Afflicted Areas since the Disaster.

Despite the fact that many people, including the elderly, in the afflicted areas suffered health issues at the time of the disaster, statistics calculated from actual figures for medical expenses and nursing care services in Iwate, Miyagi, and Fukushima Prefectures produce data showing that the medical expenses of residents and use of nursing care services by the elderly have declined since the disaster.

(2) Despite Post-Disaster Stress, Statistics Show that Suicide Rates in the Afflicted Regions are lower than the National Average.

There is research showing that suicide rates following major disasters in other countries rose by more than 10% (Etienne et al., 1998). However, statistics suggest that suicide rates in the afflicted areas have been below the national average in years since the disaster. Since the disaster, only Miyagi Prefecture has shown a reversed increasing trend in the second year following the disaster. Thus, there are concerns about possible delay in the psychological rebound of people who experienced the disaster.

(3) There are Losses and Distortions in Statistical Data that were Caused by the Disaster.

It can be pointed out that a reason for the existence of such statistical data that, at first glance, seems odd and inconsistent with actual circumstances is the occurrence of numerous irregular factors. Among them are losses of data in statistical surveys that were caused by the disaster, the inability to provide hospitals and nursing-care businesses even when needs existed, and failure to account for items in statistics because they were handled specially outside the boundaries of traditional medical care and welfare systems.

Using currently obtained data as supporting data when making decisions about the status of reconstruction in afflicted areas, formulating medium- and long-term public welfare policies, and studying other major disasters and their countermeasures is risky. This makes statistical correction, additional surveys, and attention to rereading and interpretation of values necessary.

A statistical material that is generally used to ascertain the health circumstances of Japan's public is the "Comprehensive Survey of Living Conditions" conducted by the Ministry of Health, Labour and Welfare. Conducted every three years, this survey studies the health circumstances of residents throughout Japan using "health questionnaires." However, 2011, the year that the Great East Japan Earthquake struck, was not a scheduled year of the health questionnaire-based survey, and thus no statistics were obtained that could give a comprehensive picture on the disaster's impact on the public's health. Although numerous surveys that attempted to ascertain effects on health after the disaster were planned and executed, their use posed problems, as they focused only on municipalities in the afflicted regions or on specific groups, such as people in evacuation centers or regions affected by the nuclear power plant accident.

Thus, given the need to accurately ascertain actual disaster circumstances in statistical form, the author conducted an original survey for this study that includes the following items. By obtaining comprehensively surveyed data on changes in people's mental and physical health state both immediately following the disaster and subsequently, the author was able to conduct a detailed study of whether or not effects on health that are observed in the afflicted areas are characteristic phenomena by comparing the data with changes in the health circumstances of ordinary residents in non-afflicted areas throughout Japan over the past two years.

1.2. Outline of the Original Surveys

The report of this paper is based on results obtained from the following two questionnaire surveys.

Survey A Y. Tsukuda, S. Masuda, H. Yoshida, T. Watanabe, M. Sato, *Higashi Nihon Daishinsai-go no Kenko oyobi Seikatsu ni kan-suru Anketo Chosa (Kihon Shukei Kekka)* (questionnaire survey on health and daily living following the Great East Japan Earthquake (results of basic tabulation)), April 2013.

This survey targeted three prefectures that were directly afflicted by the disaster (Iwate, Miyagi, and Fukushima) as well as other prefectures. Using an Internet research company, the survey's authors requested the cooperation of people registered with the company and received 850 samples (of which 480 came from the three afflicted prefectures and 370 came from other prefectures throughout Japan). They responses received concerned 1) physical health, 2) mental health, 3) receipt of care from medical institutions, 4) changes in living environment, 5) awareness of radiation, and 6) changes in location of residence. The date of the survey was March 21, 2013, which was two years after the date of the Great East Japan Earthquake.

Survey B H. Yoshida, M. Sato, *Higashi Nihon Daishinsai ni kan-suru Yoron Chosa (Kihon Shukei Kekka)* (public opinion survey on the Great East Japan Earthquake (results of basic tabulation)), May 2013.

This survey targeted three prefectures that were directly afflicted by the disaster (Iwate, Miyagi, and Fukushima) as well as prefectures in and around the Tokyo metropolitan area (Saitama, Ibaraki, Chiba, and Tokyo). Using a membership-based Internet survey agency, the authors asked for the cooperation of members in answering questions concerning 1) living environment, 2) rubble disposal, 3) evacuation at the time of the disaster, 4) government response, and 5) changes in awareness following the disaster. Responses were received from 838 samples (of which, 422 were from the three afflicted prefectures and 416 were from the other prefectures). The survey was held on March 28, 2013.

2. **Survey A** Report on the Results on the Survey related to Health and Daily Living

The following provides a brief overview of health-related results in Survey A.

2.1. Health-Related Survey Results

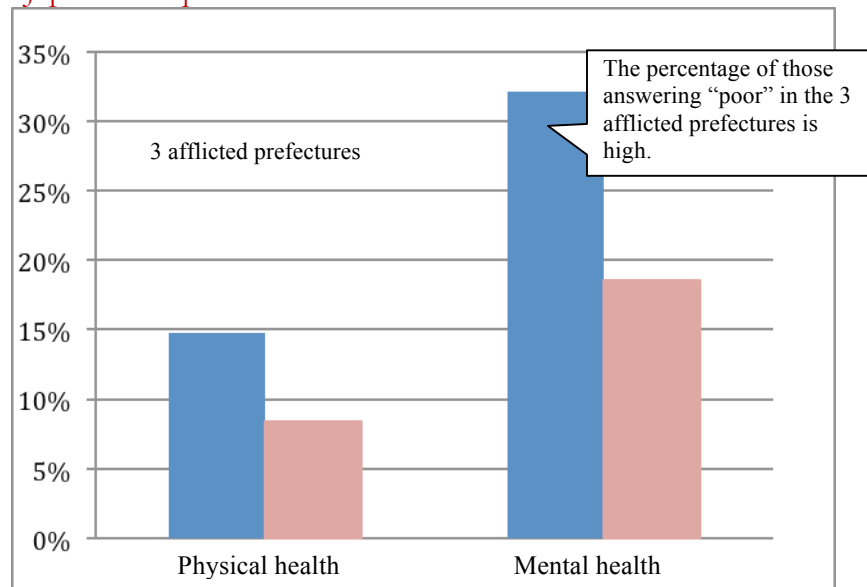
(1) Status of Mental and Physical Health Immediately Following the Great East Japan Earthquake

To begin, Table 1 provides a summary of results obtained when respondents were asked about the state of their mental and physical health during the first three months following the Great East Japan Earthquake. Looking at Table 1, the percentage of people in the three afflicted prefectures who said their physical health state was “poor” is 14.8%. This is higher than the national average of residents living in non-afflicted prefectures, which is 8.4%. This trend is even larger for mental health, as 32.1% of respondents in the three afflicted prefectures answered that their mental health was “poor” immediately following the disaster. This figure is considerably higher than the 18.6% national average in the non-afflicted prefectures. As is shown in Figure 1, these results suggest that residents in the three afflicted prefectures had poorer health states than those in other prefectures at a point immediately following the disaster, and that this phenomenon was more apparent in the case of mental health.

Table 1. States of Mental/Physical Health Immediately Following the Great East Japan Earthquake².

	Physical health				Mental health			
	Total	Good	Average	Poor	Total	Good	Average	Poor
3 afflicted prefectures	480	20	389	71	480	20	306	154
	100.0	4.2	81.0	14.8	100.0	4.2	63.8	32.1
Other prefectures (nationwide)	370	14	325	31	370	11	290	69
	100.0	3.8	87.8	8.4	100.0	3.0	78.4	18.6
Total	850	34	714	102	850	31	596	223
	100.0	4.0	84.0	12.0	100.0	3.6	70.1	26.2

Figure 1. Percentages of People who Answered that their State of Mental/Physical Health was “Poor” Immediately Following the Great East Japan Earthquake².



Source: Author' Own Elaboration.

² The upper row is the number of responses, while the lower row is the percentage. The table was prepared by the author from the results of the questionnaire survey (Q1, Q2). The question was phrased as follows: “This item pertains to your physical (mental) health. Please respond with regard to the state of your physical (mental) health at the time of the Great East Japan Earthquake and at the present time. Please select the option that best applies. Please note that ‘the time of the Great East Japan Earthquake’ as it is used here refers to the three-month period that immediately followed the Great East Japan Earthquake”.

(2) Changes in States of Physical and Mental Health Two Years after the Disaster

Next, Table 2 summarizes the results of a survey on changes of health state (i.e., “improved,” “no change,” or “worsened”) during the two years following the disaster. Looking at these results, the percentage of residents in the three afflicted prefectures who answered “improved” for physical health is 10.2%, which is higher than the national average of 7.3%. Similarly for mental health, the percentage for this response in the three afflicted regions is 15.6%, which is higher than the national average of 10.0% for the non-afflicted regions. Thus, it was observed that, although health states temporarily suffered as a result of the disaster, both physical health and mental health showed recoveries in the three afflicted prefectures during the subsequent two years. At the same time, however, the percentage of people who answered that their state of physical health had “worsened” during the subsequent two years compared to immediately following the disaster is 9.8%, which is high compared to the national average of 5.9% for non-afflicted prefectures. The same thing can be said about mental health, where the percentage of residents in the three afflicted prefectures who answered “worsened” is 13.3%. This figure is higher than the national average of 8.6% for the non-afflicted prefectures. Thus, as can be seen in Figure 2, a split into “people whose condition is recovering” and “people whose condition is not recovering or is worsening” is occurring in the afflicted areas two years after the disaster, and there is the distinct possibility that mental and physical health states are becoming more disparate.

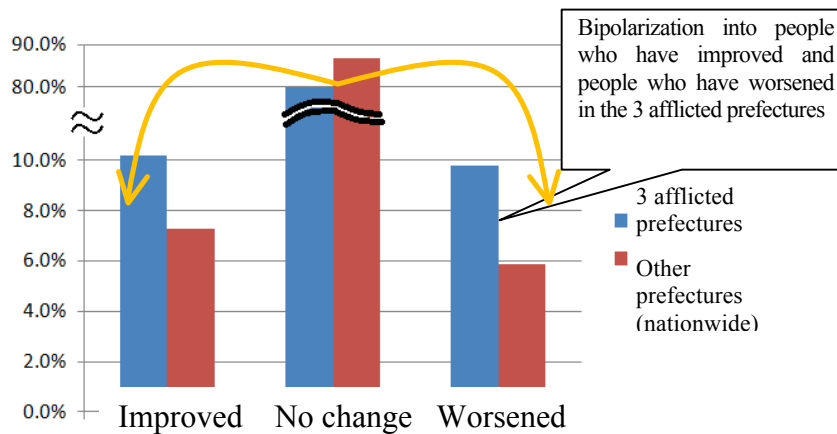
Table 2. Changes in States of Physical/Mental Health Two Years after the Disaster³.

	Physical health			
	Total	Improved	No change	Worsened
3 afflicted prefectures	480	49	384	47
	100.0	10.2	80.0	9.8
Other prefectures (nationwide)	370	27	321	22
	100.0	7.3	86.8	5.9
Total	850	76	705	69
	100.0	8.9	82.9	8.1
	Mental health			
	Total	Improved	No change	Worsened
3 afflicted prefectures	480	75	341	64
	100.0	15.6	71.0	13.3
Other prefectures (nationwide)	370	37	301	32
	100.0	10.0	81.4	8.6
Total	850	112	642	96
	100.0	13.2	75.5	11.3

Source: Author's Own Elaboration.

³ The upper row is the number of responses, while the lower row is the percentage. The table was prepared by the author from the results of the questionnaire survey (Q1, Q2). The question was phrased as follows: "This item pertains to your physical (mental) health. Please respond with regard to the state of your physical (mental) health at the time of the Great East Japan Earthquake and at the present time. Please select the option that best applies".

Figure 2. Changes in States of Physical Health two Years after the Disaster³.



Source: Author's Own Elaboration.

(3) Effects on the Health of Women and the Elderly

Finally, states of mental and physical health immediately following the disaster and subsequent two-year changes were tabulated by gender and age group. This was done to identify which attributes among residents of the afflicted areas demonstrated the strongest effect on health.

(3.1) Risk of Disaster-Related Negative Impact on Health for Women that is more than triple that for Men

Table 3 shows results that were obtained when data on state of mental and physical health immediately following the Great East Japan Earthquake were re-tabulated by sex. Looking at the table, the percentage of female respondents in the afflicted areas that answered that their physical health is "poor" is 20.4%, which is higher than the 9.2% for men in the same afflicted areas. The percentage of women who answered that their state of physical health is "poor" is also generally high when compared to men nationwide (i.e., in non-afflicted prefectures). However, when it is considered that the percentage for these women is 10.8%, it is apparent that a higher percentage of women are suffering from worsening health in the afflicted regions.

Table 3. States of Mental/Physical Health Immediately Following the Great East Japan Earthquake by Sex⁴.

		Physical health			
		Total	Good	Average	Poor
3 afflicted prefectures	Men	240	12	206	22
		100.0	5.0	85.8	9.2
	Women	240	8	183	49
		100.0	3.3	76.3	20.4
Other prefectures (nationwide)	Men	185	6	168	11
		100.0	3.2	90.8	5.9
	Women	185	8	157	20
		100.0	4.3	84.9	10.8
Total		850	34	714	102
		100.0	4.0	84.0	12.0
		Mental Health			
		Total	Good	Average	Poor
3 afflicted prefectures	Men	240	9	174	57
		100.0	3.8	72.5	23.8
	Women	240	11	132	97
		100.0	4.6	55.0	40.4
Other prefectures (nationwide)	Men	185	5	156	24
		100.0	2.7	84.3	13.0
	Women	185	6	134	45
		100.0	3.2	72.4	24.3
Total		850	31	596	223
		100.0	4.0	70.1	26.2

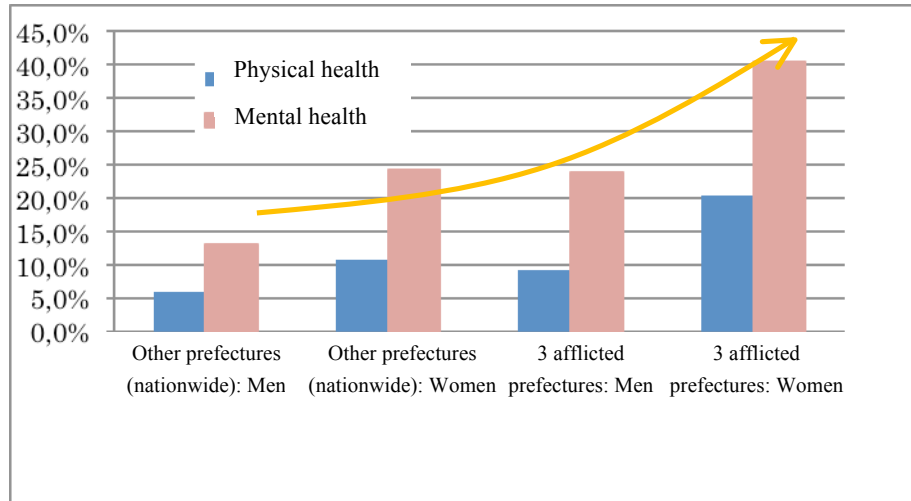
Source: Author's Own Elaboration.

It deserves noting that this trend is even more marked in the case of mental health. Of women in the afflicted areas, a considerably high percentage of 40.4% answered that their mental health state was “poor” immediately following the Great East Japan Earthquake.

As is shown in Figure 3, when the state of health of men in non-afflicted areas is used as the base, the percentage of responses indicating “poor” state of health rises with the factors “residing in an afflicted area” and “female”. It reaches 3.46 times (=20.4%/5.9%) in the case of physical health and 3.11 times (=40.4%/13%) in the case of mental health. Thus, it is possible that the risk that women in the afflicted areas will suffer from poorer mental or physical health as a result of the disaster more than triples.

⁴ The upper row is the number of responses, while the lower row is the percentage. Other details are the same as Table 1. Tabulated by sex.

Figure 3. Percentages of People who answered that their State of Mental/Physical Health was “Poor” Immediately Following the Great East Japan Earthquake by Sex⁴.



Source: Author’s Own Elaboration.

Table 3 looked at the evaluation of mental and physical health immediately following the disaster in terms of sex. Next, Table 4 shows tabulated results concerning changes in state of health during the two-year period following the disaster.

Table 4. Changes in States of Physical/Mental Health two Years after the Disaster by Sex⁵.

		Physical health			
		Total	Improved	No change	Worsened
3 afflicted prefectures	Men	240	19	199	22
		100.0	7.9	82.9	9.2
	Women	240	30	185	25
		100.0	12.5	77.1	10.4
Other prefectures (nationwide)	Men	185	8	164	13
		100.0	4.3	88.6	7.0
	Women	185	19	157	9
		100.0	10.3	84.9	4.9
Total		850	76	705	69
		100.0	8.9	82.9	8.1
		Mental Health			
		Total	Improved	No change	Worsened
3 afflicted prefectures	Men	240	27	185	28
		100.0	11.3	77.1	11.7
	Women	240	48	156	36
		100.0	20.0	65.0	15.0
Other prefectures (nationwide)	Men	185	12	156	17
		100.0	6.5	84.3	9.2
	Women	185	25	145	15
		100.0	13.5	78.4	8.1
Total		850	112	642	96
		100.0	13.2	75.5	11.3

Source: Author's Own Elaboration.

Looking at Table 4, the percentages of people who answered that their state of mental/physical health had “improved” are higher but improving for both men and women in the three afflicted prefectures compared to the national average for the other prefectures. However, as was pointed out for Table 2, the percentages of people who answered “worsened” are also high in the afflicted areas for both men and women, leading to concern that a so-called “bipolarization” of health states is occurring. This bipolarization trend is more evident among women than men in the afflicted areas. This becomes clear when looking at the percentages of “no change” outside of “improved” and “worsened.” A look at the table shows that, in particular, 65% of women in the afflicted areas answered “no change.” This was the lowest percentage when compared to the percentages of “no change” for the other respondent attributes. This

⁵ The upper row is the number of responses, while the lower row is the percentage. Other details are the same as Table 2. Tabulated by sex.

suggests that health disparities continue to grow among women in the afflicted areas.

(3.2) Worsening Health among Elderly People aged 50 years or Older

In this section, the ages of respondents are classified into “less than 50 years” and “50 years or older” to examine the effects that the Great East Japan Earthquake had on health by age group.

Table 5. States of Mental/Physical Health Immediately Following the Great East Japan Earthquake by Age Group⁶.

		Physical health			
		Total	Good	Average	Poor
3 afflicted prefectures	Less than 50 years	288	14	232	42
		100.0	4.9	80.6	14.6
	50 years or older	192	6	157	29
		100.0	3.1	81.8	15.1
Other prefectures (nationwide)	Less than 50 years	222	11	190	21
		100.0	5.0	85.6	9.5
	50 years or older	148	3	135	10
		100.0	2.0	91.2	6.8
Total		850	34	714	102
		100.0	4.0	84.0	12.0
		Mental health			
		Total	Good	Average	Poor
3 afflicted prefectures	Less than 50 years	288	12	175	101
		100.0	4.2	60.8	35.1
	50 years or older	192	8	131	53
		100.0	4.2	68.2	27.6
Other prefectures (nationwide)	Less than 50 years	222	9	166	47
		100.0	4.1	74.8	21.2
	50 years or older	148	2	124	22
		100.0	1.4	83.8	14.9
Total		850	31	596	223
		100.0	3.6	70.1	26.2

Source: Author's Own Elaboration.

⁶ The upper row is the number of responses, while the lower row is the percentage. Other details are the same as Table 1. Tabulated by age group.

Looking at Table 5, although the percentages for “poor” are higher in the three afflicted prefectures compared to other regions nationwide for both mental and physical health, there is no significant difference among the age groups in terms of physical health. As for mental health, the percentage answering “poor” for the “less than 50 years” group in the afflicted areas is 35.1%, which is higher than that for the more elderly “50 years or older” group in the afflicted areas. However, it must be noted that a similar trend is evident for mental health in the national averages.

Next, Table 6 shows tabulated results concerning changes in state of health during the two-year period following the disaster with focus on the same age groups. Here, trends that differ from those seen in Table 5 are observed. First, looking at physical health, the percentage of respondents who answered “improved” during the two-year period following the disaster in the “less than 50 years” group is 13.5%, which is higher than the 8.7% who answered “worsened.” In contrast, the percentage of those who answered “worsened” in the “50 years or older” group is 11.5%, which is higher than the 5.2% who answered “improved.” Similarly, looking at mental health, the percentage of respondents who answered “improved” in the “less than 50 years” group is 20.1%, which is higher than the 11.5% who answered “worsened.” The opposite trend is seen in the “50 years or older” group, where the percentage of those who answered “worsened” is higher.

From the above, it is apparent that there was little difference between age groups in terms of physical health in the afflicted areas immediately following the disaster, although the “less than 49 years” group showed slightly poorer mental health states. However, after the passage of two years, there are rising percentages of respondents in the “50 years or older” group who answered “worsened” for both mental and physical health, which on average suggests a worsening trend. Thus, the possibility that the disaster has caused expanding disparities in states of health between the age groups is a concern.

Table 6. Changes in States of Physical/Mental Health two Years after the Disaster by Age Group⁷.

		Physical health			
		Total	Improved	No change	Worsened
3 afflicted prefectures	Less than 50 years	288	39	224	25
		100.0	13.5	77.8	8.7
	50 years or older	192	10	160	22
		100.0	5.2	83.3	11.5
Other prefectures (nationwide)	Less than 50 years	222	20	188	14
		100.0	9.0	84.7	6.3
	50 years or older	148	7	133	8
		100.0	4.7	89.9	5.4
Total		850	76	705	69
		100.0	8.9	82.9	8.1
		Mental health			
		Total	Improved	No change	Worsened
3 afflicted prefectures	Less than 50 years	288	58	197	33
		100.0	20.1	68.4	11.5
	50 years or older	192	17	144	31
		100.0	8.9	75.0	16.1
Other prefectures (nationwide)	Less than 50 years	222	29	179	14
		100.0	13.1	80.6	6.3
	50 years or older	148	8	122	18
		100.0	5.4	82.4	12.2
Total		850	112	642	96
		100.0	13.2	75.5	11.3

Source: Author's Own Elaboration.

(4) Receipt of Care from Medical Institutions

Next, this section looks at results concerning the receipt of care from medical institutions. To begin, it is apparent that a slightly high percentage of men in the afflicted areas did not receive medical care immediately following the disaster.

⁷ The upper row is the number of responses, while the lower row is the percentage. Other details are the same as Table 2. Tabulated by age group.

Table 7. Receipt of Medical Care Immediately following the Great East Japan Earthquake⁸.

		Total	Receiving care	Require care but not receiving it	No need for care
Total		850	232	91	527
		100.0	27.3	10.7	62.0
Region of residence (by sex)	Afflicted areas: Men	240	59	32	149
		100.0	24.6	13.3	62.1
	Afflicted areas: Women	240	69	22	149
		100.0	28.8	9.2	62.1
	Other areas: Men	185	55	19	111
		100.0	29.7	10.3	60.0
Other areas: Women	185	49	18	118	
	100.0	26.5	9.7	63.8	

Source: Author's Own Elaboration.

Next, there are many people, both male and female, in the afflicted areas who are not receiving the medical care they require now.

Table 8. Receipt of Medical Care at the Present Time⁹.

		Total	Receiving care	Require care but not receiving it	No need for care
Total		850	59	82	709
		100.0	6.9	9.6	83.4
Region of residence (by sex)	Afflicted areas: Men	240	17	27	196
		100.0	7.1	11.3	81.7
	Afflicted areas: Women	240	15	23	202
		100.0	6.3	9.6	84.2
	Other areas: Men	185	16	17	152
		100.0	8.6	9.2	82.2
Other areas: Women	185	11	15	159	
	100.0	5.9	8.1	85.9	

Source: Author's Own Elaboration.

⁸ The upper row in the table is the number of respondents (people). The lower row shows the response rate (%) within the total.

Q3: "This item pertains to your receipt of medical care at a hospital or other medical institution. Please answer regarding your receipt of care at a hospital, etc., for a physical or mental health condition at the present time. Please select the option that best applies."

⁹ The upper row in the table is the number of respondents (people). The lower row shows the response rate (%) within the total.

2.2. Changes in Living Environment

Next, this section examines comparisons with pre-disaster conditions in three areas—namely, income, residential environment, and human relationships—in order to see changes in living environments that occurred after the disaster.

Q4: “This item pertains to changes in your current living environment compared to conditions prior to the Great East Japan Earthquake. Please respond by comparing your current income, residential environment, and human relationships with those that existed prior to the disaster. Please select the option that best applies.”

(1) Income

In terms of income, the results for the afflicted areas are not particularly bad.

Table 9. Changes in Income¹⁰.

		Total	Better	Somewhat better	No change	Somewhat worse	Worse
Total		850	21	58	519	149	103
		100.0	2.5	6.8	61.1	17.5	12.1
By region of residence	3 afflicted prefectures	480	14	38	276	81	71
		100.0	2.9	7.9	57.5	16.9	14.8
	Other regions	370	7	20	243	68	32
		100.0	1.9	5.4	65.7	18.4	8.6

Source: Author’s Own Elaboration.

¹⁰ The upper row in the table is the number of respondents (people). The lower row shows the response rate (%) within the total.

(2) Residential environment

Residential environments are clearly worsening in the afflicted areas.

Table 10. Changes In Residential Environment¹¹.

		Total	Better	Somewhat better	No change	Somewhat worse	Worse
Total		850	19	35	659	91	46
		100.0	2.2	4.1	77.5	10.7	5.4
By region of residence	3 afflicted prefectures	480	15	24	329	72	40
		100.0	3.1	5.0	68.5	15.0	8.3
	Other regions	370	4	11	330	19	6
		100.0	1.1	3.0	89.2	5.1	1.6

Source: Author's Own Elaboration.

(3) Human relationships

While many responses from the afflicted areas indicated that human relationships were “worse,” the afflicted areas also produced more answers of “better” than the other regions. This may suggest a split into two distinct groups.

Table 11. Changes in Human Relationships¹².

		Total	Better	Somewhat better	No change	Somewhat worse	Worse
Total		850	15	81	652	75	27
		100.0	1.8	9.5	76.7	8.8	3.2
By region of residence	3 afflicted prefectures	480	10	56	342	53	19
		100.0	2.1	11.7	71.3	11.0	4.0
	Other regions	370	5	25	310	22	8
		100.0	1.4	6.8	83.8	5.9	2.2

Source: Author's Own Elaboration.

(4) Awareness of Radiation

Immediately following the disaster, a contrasting distribution existed whereby awareness of radiation was strong in the afflicted areas but nonexistent in other regions.

¹¹ The upper row in the table is the number of respondents (people). The lower row shows the response rate (%) within the total.

¹² The upper row in the table is the number of respondents (people). The lower row shows the response rate (%) within the total.

Table 12. Awareness of Radiation at the Time of the Great East Japan Earthquake¹³.

		Total	Strong	Weak	No awareness
Total		850	542	38	270
		100.0	63.8	4.5	31.8
By region of residence	3 afflicted prefectures	480	315	22	143
		100.0	65.6	4.6	29.8
	Other regions	370	227	16	127
		100.0	61.4	4.3	34.3

Source: Author's Own Elaboration.

However, currently both the afflicted areas and other regions are showing stronger awareness. The afflicted areas produced more responses of “weaker” than the other regions, while in fact the other regions produced more responses of “stronger.”

Table 13. Current Awareness of Radiation¹⁴.

		Total	Stronger	Weaker	No change
Total		850	409	168	273
		100.0	48.1	19.8	32.1
By region of residence	3 afflicted prefectures	480	230	108	142
		100.0	47.9	22.5	29.6
	Other regions	370	179	60	131
		100.0	48.4	16.2	35.4

Source: Author's Own Elaboration.

3. Survey B Situation at the Time of the Disaster, Government, Response, and Changes in Awareness

This next section clarifies 1) living environments, 2) rubble disposal, 3) evacuation at the time of the disaster, 4) government response, and 5) changes in awareness following the disaster based on Survey B.

¹³ The upper row in the table is the number of respondents (people). The lower row shows the response rate (%) within the total.

¹⁴ The upper row in the table is the number of respondents (people). The lower row shows the response rate (%) within the total.

3.1. Situation at the time of the Disaster

(1) Place of Lodging

On the day that the earthquake struck, 78% of respondents in the afflicted areas and 83% in the Tokyo metropolitan area stayed at their own home. A point worth noting in the case of the Tokyo metropolitan area is that nearly 10% of respondents stayed at their “place of employment,” which points to a strong need for disaster-management measures at companies.

Table 14. Place of Lodging on the Day of the Disaster.

		Q3 From the day of the disaster to the following day (March 11 to 12, 2011), where did you stay? *If you stayed at more than one place, please choose the one at which you spent the longest time.													
		Total	Own home (undamaged)	Own home (damaged)	Relative's home	Building of employment	Government building (ex.: city office, prefectural office)	School	Hospital	Other public facility (ex.: gymnasium, community center)	Private-sector lodging or hotel	Private facility	On street or in park	Public transport facility (ex.: train station)	Other
Total		838	419	259	28	50	5	22	5	20	6	2	8	1	13
		100.0	50.0	30.9	3.3	6.0	0.6	2.6	0.6	2.4	0.7	0.2	1.0	0.1	1.6
Afflicted areas	3 afflicted prefectures	422	160	171	18	11	4	15	4	19	5	1	6	0	8
		100.0	37.9	40.5	4.3	2.6	0.9	3.6	0.9	4.5	1.2	0.2	1.4	0.0	1.9
	Near Tokyo met. area	416	259	88	10	39	1	7	1	1	1	1	2	1	5
		100.0	62.3	21.2	2.4	9.4	0.2	1.7	0.2	0.2	0.2	0.2	0.5	0.2	1.2

Source: Author's Own Elaboration.

Table 15. Cases Excluding “Own Home (Undamaged).

	Own home (damaged)	Relative's home	Building of employment	Government building	School	Hospital	Other public facility	Private-sector lodging	Private facility	On street	Public transport facility	Other
Afflicted areas	65.3 %	6.9 %	4.2 %	1.5 %	5.7 %	1.5 %	7.3 %	1.9 %	0.4 %	2.3 %	0.0 %	3.1 %
Tokyo met. area	56.1 %	6.4 %	24.8 %	0.6 %	4.5 %	0.6 %	0.6 %	0.6 %	0.6 %	1.3 %	0.6 %	3.2 %

Source: Author's Own Elaboration.

(2) Method for Obtaining Information

Table 16. Method for Obtaining Information.

		Q8 What was your primary source of information at the time of the disaster? Please select all of the following that apply.										
		Total	Television	Radio	Mobile phone television (“one-seg TV”)	E-mail, Twitter, etc.	Internet website	Newspaper	Announcements by city dept., etc.	Word of mouth	Other means	None in particular
Total		838 100.0	414 49.4	428 51.1	168 20.0	104 12.4	189 22.6	102 12.2	52 6.2	75 8.9	22 2.6	18 2.1
Afflicted areas	3 afflicted prefectures	422 100.0	126 29.9	273 64.7	116 27.5	52 12.3	54 12.8	60 14.2	35 8.3	53 12.6	10 2.4	11 2.6
	Near Tokyo met. area	416 100.0	288 69.2	155 37.3	52 12.5	52 12.5	135 32.5	42 10.1	17 4.1	22 5.3	12 2.9	7 1.7

Source: Author's Own Elaboration.

Looking means of obtaining information, radio was the most common in the afflicted areas (where some power outages occurred), while television

was the most common in the Tokyo metropolitan area. There was also a difference in Internet use between the two regions.

3.2. Opinions vis-à-vis Government

(1) Persons/Organizations that Proved Reliable

It is worth noting that confidence in the government and public institutions was low, and that respondents relied on local residents and family in the afflicted areas and others in the workplace in the Tokyo metropolitan area.

Table 17. Persons/Organizations that Proved Reliable.

	Q10 On which of the following did you rely most at the time of the disaster. Please choose one.															
	Total	Prime minister/other minister	Prefectural governor	Mayor	Diet member	Bureaucrats	Teacher	Police	Fire dept.	Self-Defense Forces	Neighborhood association, neighbors	Family, relatives	Others in the workplace	Volunteers, NPOs	Other	None in particular
Total	838 100.0	2 0.2	5 0.6	3 0.4	0 0.0	0 0.0	7 0.8	7 0.8	17 2.0	53 6.3	74 8.8	341 40.7	68 8.1	7 0.8	30 3.6	224 26.7
Iwate	107 100.0	0 0.0	1 0.9	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	4 3.7	4 3.7	10 9.3	51 47.7	10 9.3	1 0.9	6 5.6	20 18.7
Miyagi	207 100.0	1 0.5	4 1.9	0 0.0	0 0.0	0 0.0	3 1.4	1 0.5	3 1.4	17 8.2	32 15.5	91 44.0	14 6.8	2 1.0	9 4.3	30 14.5
Fukushima	108 100.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 0.9	4 3.7	6 5.6	8 7.4	52 48.1	6 5.6	0 0.0	1 0.9	30 27.8
Ibaraki	105 100.0	1 1.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 1.0	3 2.9	7 6.7	13 12.4	44 41.9	7 6.7	1 1.0	2 1.9	26 24.8
Saitama	110 100.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 0.9	1 0.9	2 1.8	7 6.4	3 2.7	37 33.6	9 8.2	3 2.7	4 3.6	43 39.1
Chiba	104 100.0	0 0.0	0 0.0	2 1.9	0 0.0	0 0.0	2 1.9	0 0.0	1 1.0	6 5.8	6 5.8	36 34.6	9 8.7	0 0.0	3 2.9	39 37.5
Tokyo	97 100.0	0 0.0	0 0.0	1 1.0	0 0.0	0 0.0	1 1.0	3 3.1	0 0.0	6 6.2	2 2.1	30 30.9	13 13.4	0 0.0	5 5.2	36 37.1

Source: Author's Own Elaboration.

(2) Confidence in Announcements Concerning Disaster Rubble Safety

Regarding announcements concerning the safety of disaster rubble, the most common response in Fukushima Prefecture was “do not trust any

organizations regarding safety”, which demonstrates extremely strong distrust.

Table 18. Organizations Trusted with Safety.

	Q13 Which organizations do you think are the most trustworthy regarding their announcements concerning the safety of disaster rubble?										
	Total	Government (METI, etc.)	Prefectural governor	Mayor	Electric power company	Research institute of university, etc.	Nuclear Regulation Authority	Specialized organization from other country	Other organization	Do not trust the safety of information announced by any of the above	Do not know
Total	838 100.0	121 14.4	81 9.7	87 10.4	5 0.6	104 12.4	13 1.6	99 11.8	7 0.8	186 22.2	135 16.1
Iwate	107 100.0	8 7.5	16 15.0	23 21.5	1 0.9	11 10.3	1 0.9	5 4.7	3 2.8	16 15.0	23 21.5
Miyagi	207 100.0	32 15.5	33 15.9	26 12.6	1 0.5	21 10.1	1 0.5	12 5.8	1 0.5	45 21.7	35 16.9
Fukushima	108 100.0	10 9.3	6 5.6	9 8.3	0 0.0	8 7.4	0 0.0	17 15.7	1 0.9	38 35.2	19 17.6
Ibaraki	105 100.0	18 17.1	12 11.4	8 7.6	1 1.0	14 13.3	3 2.9	11 10.5	0 0.0	20 19.0	18 17.1
Saitama	110 100.0	19 17.3	3 2.7	7 6.4	2 1.8	21 19.1	2 1.8	17 15.5	0 0.0	26 23.6	13 11.8
Chiba	104 100.0	14 13.5	4 3.8	9 8.7	0 0.0	18 17.3	5 4.8	16 15.4	0 0.0	22 21.2	16 15.4
Tokyo	97 100.0	20 20.6	7 7.2	5 5.2	0 0.0	11 11.3	1 1.0	21 21.6	2 2.1	19 19.6	11 11.3

Source: Author’s Own Elaboration.

3.3. Lessons Learned from the Disaster

(1) Purchase of Earthquake Insurance

Here, respondents of the afflicted areas and Tokyo metropolitan area are compared in terms of whether or not they purchased earthquake insurance as a form of economic preparation or not following the disaster. The results show that purchase rates in the Tokyo metropolitan area remain low, which suggests that lessons from the disaster may not have fully permeated among residents.

Table 19. Purchase of Earthquake Insurance following the Disaster.

		Q25 What kind of disaster preparations have you made at the present time? Please choose one option for each of the following items. <Purchase of earthquake insurance>			
		Total	I have owned insurance since before the disaster	I purchased insurance after the disaster	I do not own earthquake insurance
Total		838	260	96	482
		100.0	31.0	11.5	57.5
Afflicted areas	3 afflicted prefectures	422	142	59	221
		100.0	33.6	14.0	52.4
	Near Tokyo met. area	416	118	37	261
		100.0	28.4	8.9	62.7

Source: Author's Own Elaboration.

According to this result, the earthquake insurance purchase rate in the three afflicted prefectures is 48%, while that in the Tokyo metropolitan area remains fairly low at 37%.

Table 20. Lessons Learned from the Disaster.

		Q29 Did you apply any lessons you learned from the Great East Japan Earthquake of March 11, 2013, in your evacuation or disaster-management activities at the time of the aftershock of December 7, 2012?						
		Total	I took appropriate action by fully applying what I learned	I took appropriate action by applying some of what I learned	I was aware of the situation, but did not apply much of what I learned	I applied nothing of what I learned	I could only do what I did before the disaster	I was not affected by the aftershock of December 7, 2012
Total		838	39	245	192	14	4	344
		100.0	4.7	29.2	22.9	1.7	0.5	41.1
Afflicted areas	3 afflicted prefectures	422	29	139	96	6	3	149
		100.0	6.9	32.9	22.7	1.4	0.7	35.3
	Near Tokyo metropolitan area	416	10	106	96	8	1	195
		100.0	2.4	25.5	23.1	1.9	0.2	46.9

Source: Author's Own Elaboration.

Although more than 40% of respondents in the afflicted areas applied what they learned fully or to some degree, only 28% in the Tokyo metropolitan area did so.

Table 21. Cases Excluding “was not affected by the Aftershock”.

	I took appropriate action by fully applying what I learned	I took appropriate action by applying some of what I learned	I was aware of the situation, but did not apply much of what I learned	I applied nothing of what I learned	I could only do what I did before the disaster
3 afflicted prefectures	10.6%	50.9%	35.2%	2.2%	1.1%
Near Tokyo met. area	4.5%	48.0%	43.4%	3.6%	0.5%

Source: Author’s Own Elaboration.

The above-mentioned trend becomes obvious in tabulation of “cases excluding “was not affected by the aftershock”.”

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