

PART III C

Chapter 23

Earthquake Risk Management Policy in Indonesia

by
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Indonesia is located at the convergence of three major tectonic plates, namely the Eurasian, the Indo-Australian and the Pacific plates. This situation generates thousands of earthquakes every year, most of which are potentially destructive. The Government has established a National Coordinating Board for Natural Disaster and Refugee Management (BAKORNAS PBP) in 1979. This chapter provides an overview of the main features and purposes of this scheme.

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1. Earthquake Risk in Indonesia

Indonesia is located at the convergence of three major tectonic plates, namely the Eurasian, the Indo-Australian and the Pacific plates. This tectonic cocktail generates thousands of earthquakes every year, most of which are potentially destructive.

Whilst much of Western Indonesia is located on a relatively stable part of the Eurasian plate, the Sumatera trench or fault zone spans the entire length of Sumatera and is similar to the San Andreas fault in California. The greatest seismic hazard in Indonesia comes from this fault zone.

Sumatera alone has suffered more than 15 big earthquakes in the past 100 years.

Besides Sumatera, other areas most prone to earthquakes are Java, Bali, Nusa Tenggara, Moluku, Sulawesi and Irian Jaya.

The earthquake hazard in Jakarta and Surabaya is considered as low to average.

Historical records suggest that earthquakes and volcanoes top the list of significant perils. Suggestions are that there is some co-relation between regions with a large earthquake potential and with numerous volcanoes.

Volcanic eruptions are an ever present risk in Indonesia.

Indonesia is home to 13% of the world's active volcanoes and is therefore referred to as the "ring of fire."

Over the last 200 years an estimated 175.000 people have died as a result of volcanic activities.

The most singularly spectacular volcanic eruptions have been Tombora, the creation of Lake Toba, North Sumatera, the famous Krakatau eruption in 1883 and Mt. Agung in Bali in 1963.

There are about 104 different types of volcanoes.

This paper does not particularly deal with tsunamis, yet tsunamis are earthquake triggered. Tsunami is a major exposure in many coastal regions; it has mainly occurred in the Eastern part of Indonesia.

The 15 larger earthquakes of magnitude 4 or stronger that occurred in the period 1990 – 2001 resulted in approx. 3000 casualties. The most devastating was the one in Flores due to a tsunami.

Details of cost caused by earthquakes are difficult to come by. Most records refer to the loss of lives, not property.

But the thing that is most striking about those records is that property damage and the effect on people was considerably less in earlier decades, i.e. In the 60's, 70's and 80's. The last decade, i.e. the 90's, accounts for 97.5% of the damage and 41% of the people affected. Of the 137 natural disasters recorded from 1980 – 1999, 26% were earthquakes and tsunamis. 43% of all fatalities were due to earthquakes and tsunamis.

The lesson here is not necessarily that we have more natural disasters – this theory would open the floor to discussion on climatic changes or the El Nino phenomenon – but an increase of population and concentration in disaster exposed areas and property value concentrations.

Damage data available are largely based on loss of life and due to sparse level of information on damage, it is not clear which peril presents the greatest threat in terms of loss potential to the insurance industry. Any evaluation of natural perils should not merely focus on earthquake hazards alone. However, very likely, earthquakes have the greatest potential to produce insured losses.

2. Role of Government

The Government has established a National Coordinating Board for Natural Disaster and Refugee Management (BAKORNAS PBP) in 1979. Its tasks assigned by presidential decree are:

- Formulate policy for disaster alleviation
- Coordinate activities on disaster alleviation
- Provide guidance and direction, including disaster prevention, safety, rehabilitation, reconstruction etc.

Members of BAKORNAS PBP are: practically all ministries, including Army and Police Commander; the Chairman is the Vice President of the RI. National, province and regency level interests are represented on the Board. The level of Government involvement depends on the severity of a disaster (e.g. the number of victims or the impact on economy) and the effectiveness of any disaster plans in place is dictated by the availability of funds.

The Government's efforts focus on educational work on disaster understanding, preparedness, safety, improvement of building code, improvement of forecast and monitoring through extension and up-grading of seismological network and Meteorological and Geophysical Agency

(MGA) seismic stations. Due to its complexity and sheer size this National Coordinating Board may not be able to respond adequately in times of emergency and crisis.

Indonesia has a seismological network operated by the Meteorological and Geophysical Agency (MGA) of Indonesia under the Department of Communication. Its task is to monitor seismic activity. The seismic network has been developed after successful periods of cooperation with the US, UN, UNESCO and French Government. MGA now operates 58 stations, both digital and analog.

The network is divided into five regional seismological centers (RSC) and one national seismological center (NSC) located in Jakarta. MGA is responsible to announce to the public the hypocenter and impact of large earthquakes.

A tsunami warning system known as TREMORS (Tsunami Risk Evaluation through seismic Moment from Real-time) has been installed at the Tretes geophysical station located in East Java in 1996. The system is no longer connected to the national seismological center (NSC) since the telephone line from the station to the new location of NSC in Jakarta is no longer available.

The current networks lack density and do not cover all of Indonesia.

The funds that the Central Government has earmarked for disaster mitigation are minimal. The autonomous Provincial Governments do not budget for disaster relief investments. The current emphasis is only on disaster relief. More needs to be done in terms of pre-disaster and post-disaster planning and initiatives, such as heightening natural disaster awareness through seminars, training, brochures, co-operation between national and local Governments, engaging scientists and development of resources at Government bodies like MGA. The knowledge sources available should serve to improve urban planning, building code and enforce other short and long-term initiatives.

The vital aspect for the insurance industry of all engagements of Government in disaster management is to improve the framework for insurability of natural disasters.

Without minimum public standards of disaster awareness, education, information, monitoring, prediction, early warning, safety, prevention, alleviation, the insurance industry will not be encouraged to relieve the Government and share the potential financial drain on fiscal resources.

However, insurance protection saves people and businesses from financial bankruptcy and allows quick recovery from major catastrophes through inflow of money.

The insurance industry is a vital, indispensable sector of the economy, transferring risk from state to the individual and a capital provider.

Therefore the Government and Insurance Industry should become partners and intensify their cooperation on disaster management.

3. Role of Insurance

According to the latest annual report of the Directorate of Insurance, a total of 106 companies were licensed as of 31.12.2003, namely 3 State-owned companies, 78 private domestic direct insurer, 4 domestic reinsurers and 21 joint venture insurance companies.

Despite legislation introduced in 1999, with the aim to strengthen the industry and reduce the number of insurers, not much progress has been made. Capitalization for existing domestic companies remains low.

Deregulation in 1989 led to the abolishment of tariffs, free competition and the inevitable consequence of drastic deterioration of premium rates.

An unstable economic and political environment since the Asian economic crisis in 1997 has seen most of Indonesia's economic sectors going through a torrid period.

The reason for the relatively small size of the Indonesian insurance market is due, in part, to the economic situation, public lack of understanding and awareness of insurance, the absence of compulsory insurance, religious beliefs and also a mistrust towards financial institutions including insurance.

As compared to some of its Asian neighbors, Indonesia's insurance market penetration and density of 0.60% of GDP and US\$ 4,1 per capita respectively is considerably smaller.

When it comes to natural catastrophe insurance, in particular earthquake, the density is even less. Prevailing cultural attitudes even resist a demand surge after catastrophe events.

There are no reliable industry records regarding earthquake insurance before the establishment of the Indonesian Earthquake Pool (PRGBI) effective from 01.01.2003.

But what we know is that many insurance companies were finding it difficult to finance their reinsurance protection from the very low premium

base that they produced for the high earthquake exposures they were writing. The average rate for earthquake in Indonesia was minimal, less than 0.01%.

The insurance industry plays an important role in supporting economic growth by diversifying risks and absorbing volatility.

The objective is to form a community of insureds who pays enough premium to cover the cost of damage caused by a natural catastrophe.

An individual insurer and even an entire insurance market has capacity limitations for the underwriting of earthquake insurance covers and can not retain the huge aggregate liabilities that accumulate in their books.

There is a strong dependence on international reinsurance markets for risk transfer or other alternative financial schemes.

After experiencing horrific underwriting losses in the wake of a number of natural catastrophes and major loss events, coinciding with massive loss of assets due to stock market meltdowns, reinsurers have gone back to basics.

Proportional reinsurance of natural perils for individual insurers is unsustainable, mostly for lack of balance in geographical spread and lack of volume of portfolios and insufficient technical pricing in the absence of tariff rates.

The almost unanimously and universally accepted view among reinsurers is that global best practice to manage catastrophe loss potentials is by means of national pools or national or regional specialist companies.

The Indonesian insurance regulators were increasingly concerned with the dramatic decrease of the average rate applied for earthquake insurance, the high reinsurance protection cost (i.e. outflow of foreign currency) and the capability of insurers to meet assumed liabilities.

A long-term solution was called for.

4. Establishment of Indonesian Earthquake Pool (PRGBI)

By a further Joint Decree of the Directorate General of Financial Institutions, Department of Finance, and the General Insurance Association of Indonesia (AAUI) dated 30.11.2000, a Working Committee on Natural Disaster Insurance was set up.

Its mandate was to:

- Promote public awareness of earthquake risks

- Collect information related to earthquake
- Review the current practices of covering earthquake risks
- Make proposals for better handling

The Working Committee came up with the recommendation to set up an Earthquake Pool. It took another two years to get the support and co-operation of the market and two more directives of the Directorate of Insurance in December 2001 and April 2002, making participation in the Earthquake Pool compulsory for all general insurance and reinsurance companies.

The vehicle for this undertaking was the Indonesian Earthquake Pool or Pool Reasuransi Gempa Bumi Indonesia (PRGBI).

The PRGBI began operation from 1st January 2003.

Objectives

The Indonesian Earthquake Pool (PRGBI) aims to:

- promote discipline and proper handling of earthquake insurance in Indonesia for all type of fire property risks, i.e. agricultural, private, industrial & commercial (separate policy, technical terms)
- set a benchmark for earthquake insurance pricing in Indonesia (compulsory cession at specified tariff)
- collate statistics and data bases to justify the appropriateness of premium rates on earthquake insurance (detailed bordereaux)
- build strong local capacity for earthquake insurance in Indonesia (indirect effect).

5. Transformation of PRGBI into a Special Risk Company

Parallel to this development the Directorate of Insurance, Directorate General of Financial Institutions, Department of Finance R.I., and the Indonesian Insurance Association (AAUI) set up a Natural Disaster Insurance Committee (PPPARSK), which was given the mandate to transform the PRGBI into a legal entity of a Special Risk Insurance Company.

On 23.12.2003, PT. Asuransi MAIPARK Indonesia was established.

Several pool models were considered:

A Pool can either be organized as

- an association of participating Pool members; this was the model for the PRGBI
- a Government-run company or
- a separate company with Pool participants as shareholders; this was the model for MAIPARK.

If we look into the course taken by other countries, we will find that

- Pool solutions for natural perils insurance become more and more common; it is considered “global best practice”.
- Reinsurers support Pools as an effective way to enable sustained natural hazard insurance.
- Governments have to play a key role through their regulatory authorities in setting up the framework for schemes and bring in a certain degree of compulsion.

The key message here is that cooperation among all market participants is an indispensable mechanism for an adult, mature and well functioning insurance industry when it comes to protection against natural catastrophes. There should be no room for competition on these lines of insurance for wrongly perceived shortsighted commercial gains and advantages.

- Some of the main synergies derived from a separate public liability company instead of a pool:
 - dedicated management and staff
 - clients are shareholders and have a vested interest in the fortune of the company
 - level playing field for everybody, i.e. standard policy type and tariff, with competition focussed on service rather than coverage and price
 - provide earthquake insurance cover at affordable premium rates to policy holders over time
 - lower administrative expense
 - through concerted advertisement and PR by MAIPARK, increasing awareness and demand of the public for catastrophe insurance

- joint purchase of reinsurance protection at lower cost
- gradual decrease of dependency or over-dependency on international reinsurance to eventually achieve a certain degree of self-reliance
- Some Facts and Figures about MAIPARK:
 - Capitalization and shareholders
 - The regulator decreed a minimum shareholding of each general insurer and reinsurer operating in Indonesia of 0,5% of its invested funds. The total paid up capital of MAIPARK based on this formulae came to approx. Rp 50 billion or US\$ 5.000.000. There are 32 founding members and 65 non-founding members
 - Market cession
 - As with the PRGBI, there is currently a variable quota share cession in place. The cessions vary between 5% and 25%, depending on the location of the insured property and there is an acceptance limit of US\$ 2.500.000 any one risk.
 - Scope of cover
 - The scope of cover for earthquake is defined by the Indonesian Standard Earthquake Policy
 - Earthquake tariff
 - Just a brief comment on the earthquake tariff. It is based on the three main CRESTA zones for (1) low, (2) medium and (3) high risks. Besides the U/W criteria of zones, rates are further dependent on construction classification and occupancy
 - Compliance
 - Compliance is an important criterion for the functioning of MAIPARK. The Directorate of Insurance, Ministry of Finance, is carrying out company inspections jointly with MAIPARK to verify compliance of insurers with the compulsory nature of the operations of MAIPARK.

6. Conclusion

The journey for MAIPARK has just begun.

For a start-up, MAIPARKS's development in the first year of its operations is exceeding observers' expectations.

The average earthquake premium rate has increased tenfold from 0.01% to 0.11%.

The dramatic fall in the take-up rate for earthquake insurance, estimated between 35% to 70% of existing business, has probably not happened, though it is difficult to exactly assess this effect of the introduction of a compulsory earthquake tariff. But it is probably closer to 20% - 30% only.

The other success has been the increased transparency that has come from a separate earthquake policy and the valuable database that will be available for the marketplace as a whole and that will serve the objective to review the existing earthquake pricing and eventually formulate a technically proper earthquake tariff.

MAIPARK's commitment aims to

- promote awareness for natural disaster related problems and expertise among the insuring public, clients and shareholders
- promote a policy of "Government in partnership with industry" for constructive initiatives in disaster prevention management and risk diversification to
- build a National Catastrophe Reinsurance Company capable of providing the domestic market with a meaningful capacity and strong support from top class international reinsurers to the extent required
- evolve into the National Specialist Reinsurer for all natural peril insurances.

7. Vision

It is highly commendable that the market and the Government united to opt for ex-ante funding of disasters rather than ex-post.

However, much more needs to be done.

The actual demand on and social responsibility of the Government is to protect people's livelihood.

The calling of the private insurance industry, MAIPARK and the Government is to enter into a risk partnership to provide earthquake insurance for residential risks in Indonesia.

This is the very “raison d’être” of most of the pools established in other countries. The ambitious realization of this scheme in particular (because of the autonomy of Provincial Governments in Indonesia) and the greater earthquake insurance penetration of the market in general hinges, among other things, on the important issue of the state’s tasks to ensure the preconditions for “insurability”. Key to insurability are land use regulations and building codes, enforcement of regulations, measures to protect the infrastructure and favorable tax treatment of technical reserves for natural perils established by insurers and reinsurers.

Affordability is an extremely imperative issue too, to gain widespread acceptance of such an undertaking in an environment where people are not accustomed to mandatory insurance.

MAIPARK’s mission is a pioneering challenge that may require and would be worth of the involvement of international organizations like the IMF or the World Bank.

Annex 1

List of Speakers and Presentations at the Conference*

Session 1 - Insurability of catastrophic risks

- Economics of catastrophe risk insurance, *Christian Gollier (University of Toulouse)*.
- Insurability of terrorism risk: challenges and perspectives, *Howard Kunreuther and Erwann Michel-Kerjan (Wharton School, University of Pennsylvania)*.
- Industrial, technological and other catastrophes, *Christian Lahnstein (Munich Re)*.
- Recent trends in the catastrophe risk insurance/reinsurance market, *Patrick Murphy O'Connor (Benfield)*.
- Role of the reinsurance industry in the management of weather related risks, *Peter Zimmerli (Swiss Re)*.
- Issues and options in the management of terrorism risk through insurance, *Robert Reville (Rand Corporation)*.
- Current state of the coverage for war and terrorism risks - including NBC - in the aviation sector, *Eugene Hoeven (IATA)*
- Free market solutions for terrorism risks coverage, *Ben Garston (MAP Underwriting and Lloyd's Terrorism Panel)*.

* Power point presentations summarising papers included in this publication as well as other presentations made at the conference are available on the OECD Insurance homepage: <http://www.oecd.org/daf/insurance>.

- Improving insurability and affordability: the role of insurance in hazard identification, risk assessment, risk prevention and mitigation for industrial/chemical accidents, *Satyananda Mishra, IAS, Disaster Management Institute, Bhopal - Government of Madhya Pradesh, India*).

Session 2 - Financial market solutions to manage catastrophic risks

- International financing solutions to catastrophic risk exposures, *Torben Juul Andersen (Copenhagen Business School)*.
- The use of risk linked securities to manage catastrophic risks, including terrorism, *Christian Mumenthaler (Swiss Re)*.
- Current challenges in terrorism risk securitization, *Gordon Woo (RMS)*.
- Financing catastrophic risks in non-OECD countries: challenges and perspectives, *Reinhard Mechler (IIASA)*.
- Current market trends for catastrophe bonds and risk linked securities, *Christopher McGhee (MMC Securities, Guy Carpenter)*.
- The potential for new risk transfer instruments to cover terrorism risks, *Michele David (The Bond Market Association)*.
- Rating agency's perspective on catastrophe bonds and risk linked securities, *Rodrigo Araya (Moody's)*.

Session 3 - Role of governments and development of public-private partnerships for catastrophe risk management

- Role of governments in natural catastrophe risk management and financing in OECD countries, *Paul K. Freeman (University of Denver)*.
- Catastrophe insurance programs in emerging countries: field experience, *Eugene Gurenko (World Bank, Financial Sector Operations and Policy Department)*.
- Potential role for governments in terrorism coverage, *Dwight Jaffee (Haas School of Business, UC Berkeley)*.
- Public-private partnerships to cover terrorism risks in OECD countries, *John Cooke (International Economic Relations Consultant, London)*.

- Role of the US government in the prevention and mitigation of terrorism risks, *Robert Liscouski (Infrastructure Protection Office, Department of Homeland Security, USA)*.
- Disaster risk management policy in Japan, *Kazuhiro Kawachimaru (NIPPONKOA Insurance Company Ltd)*.
- The Spanish experience in the management of extraordinary risks, including terrorism, *Ignacio Machetti (Consorcio de Compensación de Seguros)*.
- A stakeholder approach for developing a public-private partnership: the Hungarian case, *Reinhard Mechler (IIASA)*.
- Disaster risk management policy in China, *Yuanchang Zheng and Jianguo Mu (Department of Disaster and Social Relief, Ministry of Civil Affairs)*.
- The French experience in natural catastrophe risk management, *Suzanne Vallet (Caisse Centrale de Réassurance)*.
- Earthquake risk management policy in Indonesia, *Werner Bugl (PT Asuransi, MAIPARK Indonesia)*.
- Disaster risk management policy in Mexico, *Carlos Bayo Martinez (FONDEN)*.
- Disaster risk management policy in the Philippines, *Ronald I. Flores (Department of National Defense, Office of Civil Defense, National Disasters Coordinating Council)*.
- Disaster management in India, *D. Madan (Under Secretary, National Disaster Management Division, Ministry of Home Affairs, Government of India)*.
- Management of extraordinary risks, including terrorism, in India: achievements and perspectives, *C. S. Rao (Indian Insurance Regulatory and Development Authority)*.

Table of Contents

Part I

Insurability of Catastrophic Risks

<i>Chapter 1</i>	Some Aspects of the Economics of Catastrophe Risk Insurance <i>by Christian Gollier, University of Toulouse</i>	13
<i>Chapter 2</i>	Industrial, Technological and Other Catastrophes <i>by Christian Lahnstein, Munich Re</i>	31
<i>Chapter 3</i>	Recent Trends in the Catastrophic Risk Insurance / Reinsurance Market <i>by Patrick Murphy O'Connor, Benfield</i>	41
<i>Chapter 4</i>	Insurance of Atmospheric Perils – Challenges Ahead <i>by Peter Zimmerli, Swiss Re</i>	51
<i>Chapter 5</i>	National Security and Compensation Policy for Terrorism Losses <i>by Lloyd Dixon and Robert Reville, RAND Center for Terrorism Risk Management Policy</i>	59
<i>Chapter 6</i>	Current State of the Coverage for War and Terrorism Risks in the Aviation Sector <i>by Eugene Hoenen, International Air Transport Association (IATA)</i>	73
<i>Chapter 7</i>	Terrorism Insurance : An Overview of the Private Market <i>by Ben Garston, MAP Underwriting at Lloyd's</i>	81

Part II

Financial Markets Solutions to Manage Catastrophic Risks

<i>Chapter 8</i>	Current Challenges in the Securitization of Terrorism Risk <i>by Gordon Woo, Risk Management Solutions Ltd</i>	91
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<i>Chapter 9</i>	Financing Disaster Risks in Developing and Emerging Economy Countries by Reinhard Mechler, IIASA	105
<i>Chapter 10</i>	The Potential for New Derivatives Instruments to Cover Terrorism Risks by Michele David, the Bond Market Association	163
<i>Chapter 11</i>	Catastrophic Risk Securitization: Moody's Perspective by Rodrigo Araya, Moody's	171

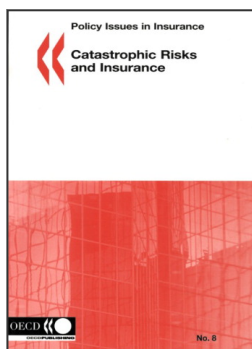
Part III

**Role of Government and Public-Private Partnerships
for Catastrophic Risks Management**

<i>Part III.A.</i>	Analytical and Comparative Reports.....	185
<i>Chapter 12</i>	Comparative Analysis of Large Scale Catastrophe Compensation Schemes by Paul K. Freeman and Kathryn Scott, University of Denver	187
<i>Chapter 13</i>	Rapid Onset Natural Disasters: the Role of Risk Financing in Effective Catastrophe Risk Management by Eugene Gurenko and Rodney Lester, World Bank	235
<i>Chapter 14</i>	Designing a Disaster Insurance Pool Participatory and Expert Approaches in Hungary and Turkey by Joanne Linnerooth-Bayer, IIASA, Anna Vári, Hungarian Academy of Sciences and Reinhard Mechler, IIASA.....	267
<i>Part III.B.</i>	Country Surveys – OECD Countries	291
<i>Chapter 15</i>	The French Experience in the Management and Compensation of Large Scale Disasters by Suzanne Vallet, Caisse Centrale de Réassurance.....	293

<i>Chapter 16</i>	Disaster Risk Management in Japan by Non-Life Insurance Rating Organization of Japan and K. Kawachimaru, NIPPONKOA Insurance Company Ltd*	303
<i>Chapter 17</i>	Natural Disasters Fund (FONDEN) by Carlos Bayo Martinez, FONDEN, Mexico	321
<i>Chapter 18</i>	The Spanish Experience in the Management of Extraordinary Risks, Including Terrorism by Ignacio Machetti, Consorcio de Compensación de Seguros	337
<i>Chapter 19</i>	The Turkish Catastrophe Insurance Pool (TCIP) and Compulsory Earthquake Insurance Scheme by S. Yazici, Permanent Delegation of Turkey to the OECD	349
<i>Part III.C.</i>	Country Surveys – Emerging Economies	365
<i>Chapter 20</i>	Natural Disasters and Disaster Relief Policy in China by Y. Zheng, Department of Disaster and Social Relief, J. Mu, National Disaster Reduction Center of China, Ministry of Civil Affairs	367
<i>Chapter 21</i>	Disaster Management in India by D. Madan, National Disaster Management Division, Ministry of Home Affairs, India	381
<i>Chapter 22</i>	Management of Extraordinary Risks, Including Terrorism, in India Achievements and Perspectives by C.S. Rao, Indian Insurance Regulatory and Development Authority	393
<i>Chapter 23</i>	Earthquake Risk Management Policy in Indonesia by Werner G. Bugl, Asuransi Maipark Indonesia	399
<i>Chapter 24</i>	Disaster Risk Management Policy in the Philippines by Ronald I. Flores, Department of National Defense, Office of Civil Defense, National Disasters Coordinating Council	411
<i>Annex 1</i>	List of Speakers and Presentations at the Conference	419

* Background Note of Mr Kawachimaru's presentation (NIPPONKOA Insurance Company Ltd), based on *Governmental Earthquake Insurance System in Japan*, from *Earthquake Insurance in Japan*, written and published in March 2003 by Non-Life Insurance Rating Organization of Japan.



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