

# UNDERSTANDING KOREA

1

NATURE



**PYONGYANG, KOREA**

**Juche 105 (2016)**

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## **1. Location**

Korea is in the centre of East Asia.

It is situated between long. 124° 10' 45" E. (western tip of Pidan Is., Sindo County, North Phyongan Province) and long. 131° 52' 28" E. (eastern tip of Tok Is., Ullung County, North Kyongsang Province) and between lat. 33° 06' 45" N. (southern tip of Mara Is., Sogwipho, Jeju Province) and lat. 43° 00' 33" N. (northern tip of Phungso-ri, Onsong County, North Hamgyong Province).

Korea is bounded on the north by China and Russia across the Amnok and Tuman rivers, and is encircled by the East, West and South seas of Korea.

## **2. Area**

Korea has an area of 223 935 sq km: the northern half of Korea 123 138 sq km and its southern half 100 797 sq km.

It also has islets and islands covering a total area of 5 829 sq km, as well as 540 000-odd hectares of tideland.

It accounts for one over six hundred and seventy-six of the globe's land and for one over two hundred of Asia's.

## **3. Climate**

Korea has a temperate climate, both continental and maritime, because it is located where the Asian Continent and the Pacific Ocean meet.



It has four distinctive seasons: spring, summer, autumn and winter.

The annual average temperature is 8.7°C; it is 9.8°C in the northern inland area.

The annual average precipitation is 966.3mm, far beyond the world average (840mm).

The annual sunshine time is from 2 280 to 2 700 hours, so it is longer than that of the other regions in the same latitude.

The sunshine duration is particularly longer in autumn, which provides conditions favourable for the ripening of cereals.

Korea is affected by seasonal wind.

There are obvious distinctions between dry and rainy seasons. In winter, it is usually cold and clear as dry, chilly wind blows northward or northwestward from the continent, whereas, in summer, it is hot and rainy as hot, humid wind blows southward or southeastward from the Pacific Ocean.

#### **4. Topography**

Mountains characterize the topography of Korea; they make up 79.3% of its land.

Though they occupy a large percentage in area, their absolute heights are not so great.

Korea has an average elevation of 443m above sea level, way below the world average (875m).

Most of its land lies below an elevation of 1 000m above sea level, the middle part at an elevation of 1 000-2 000m accounting for 12.69% and the highlands of over 2 000m for 0.29%.

The land is elevated in the north and east and falls towards the west and south.

## **5. Major Mountain Ranges**

The land of Korea is roofed by the Great Paektu Mountains extending from Mt Paektu at the northern tip to Kujae Peak on the south coast.

All other ranges are rooted in this mountain range.

It consists of eight ranges—Paektu Mountains (average height 1 860m, length 140km), Pujonryong Mountains (average height 1 580m, length 280km), Puktaebong Mountains (average height 1 100m, length 170km), Masikryong Mountains (average height 1 030m, length 90km), Cholryong Mountains (average height 880m, length 70km), Thaebaek Mountains (average height 1 030m, length 320km), Sobaek Mountains (average height 850m, length 310km) and Jiri Mountains (average height 980m, length 90km).

The Great Paektu Mountains, which is proof positive that Korea is composed of one expanse of territory, has an average elevation of 1 170m and length of 1 470km, with Janggun Peak (2 750m) of Mt Paektu as the major peak of the range.

## **6. Mt Paektu**

Mt Paektu has an elevation of 2 750m above sea level (Janggun Peak). On average, frost begins on September 3, snow falling on September 29 and remaining until June of the following year; the mountain is covered with snow over ten months a year.

Mt Paektu and the surrounding area are carpeted with grey pumice of volcanic origin.

*Paektu* means a white summit, and the mountain was called so, because its summit looks white all year round; snow or pumice crowns the mountain in all seasons.

There is Lake Chon on the top of Mt Paektu with a chain of over 200 peaks forming its outer rim, Janggun Peak being the highest in Korea.

## **7. Wonders on Mt Paektu**

The sunrise over Mt Paektu is a fascinating sight, probably without parallel in the world.

The sun rising in the east casts a red-and-blue glow over the vast expanse of dense forests, myriad-shaped rocks and peaks shrouded in clouds, turning the whole area into a sea of fire.

The water of Lake Chon remains placid and, suddenly, a terrible storm breaks out. Heavy black clouds appear out of nowhere, stones flying up and down, and disappear in the blink of an eye. Sometimes, it rains in torrents and then

starts to hail, huge great stones. After the storm, dew-laden flowers are smiling here and snowflakes are racing there.

Now and then, when a gale hits the area, a waterspout arises on the lake, throwing up a column of water, as well as fist-sized rocks, scores or hundreds of metres high. It moves 200-300m, with the water tossing and raging in turbulent eddies and thick clouds of spray enveloping the water column.

## **8. Famous Mountains**

Famous mountains in Korea include Mts Paektu, Kumgang, Myohyang, Kuwol, Chilbo, Jiri, Halla, Sorak, Jongbang, Suyang and Ryongak.

## **9. Mt Kumgang**

Numbered among the renowned mountains of the world, Mt Kumgang is located midway down the east coast of the Korean peninsula; it occupies the area of Kumgang, Kosong and Thongchon counties in Kangwon Province.

It has an average elevation of 1 639m above sea level, and extends 40km east and west and 60km north and south, covering a total area of 530 sq km.

The view of the mountain looks like a picture scroll disclosing a wonderful harmony of myriad scenes and shapes—12 000-odd high and low peaks, numerous waterfalls and ponds, rare species of flowering plants and beautiful seascape.

The mountain has been called by various names because of the variation of its scenes by the season: in spring it is called “Kumgangsan” in allusion to the diamond, in summer “Pongnaesan,” in autumn “Phungaksan” and in winter “Kaegolsan.”

It can be divided into Inner Kumgang, Outer Kumgang and Sea Kumgang, and each section of it has peculiar scenery.

## **10. Mt Myohyang**

Mt Myohyang, located in northwestern Korea, borders on Jagang, North Phyongan and South Phyongan provinces. Since olden times it has been particularly famous for its unique physical aspects and beautiful scenery.

It has a circumference of about 128km and an area of 375 sq km, and extends over 28km east and west and north and south, respectively.

It boasts a chain of famous peaks such as Piro (1 909m), Wonman, Chonthae, Hyangno and Pobwang. Sculpted by surface erosion for ages, the peaks come in all shapes, and there are clean streams in valleys.

There are also many famous waterfalls such as Isonnam, Mangyong, Ryongyon, Pidan and Unson.

## **11. Mt Kuwol**

Mt Kuwol is situated in the west of the Korean

peninsula. It has an elevation of 954m (Sahwang Peak) and covers an area of more than 110 sq km.

It is not a tall mountain but soars between Jaeryong and Unnyul plains, disclosing its singular, magnificent appearance.

It is covered with granite rocks that were formed in the wake of a volcanic eruption 150 million years ago. Through tectonic activities it was cut sharply in different parts and prone to erosion, with the result that pointed peaks and deep valleys were formed.

The mountain, with soaring peaks, ridges, thickly-wooded ravines, odd-shaped rocks, dense forests, raging waterfalls and clean streams, presents a magnificent view. Especially, the Ryongyon Falls and Samhyongje Falls, flowers blooming in different seasons, persimmons and other wild fruits growing at the foot of the mountain and autumnal tints add beauty to the landscape.

## **12. Mt Chilbo**

Mt Chilbo, located in northeastern Korea (Myongchon County, North Hamgyong Province), rises 659m (Chonbul Peak) above sea level and covers an area of more than 250 sq km.

It is called Chilbo because it has seven treasures in its bosom.

It is often called the “Mt Kumgang of North

Hamgyong” for its superb mountain- and sea-scapes.

A part of the Paektu volcanic zone, it emerged about a million years ago, at about the same time as Mt Paektu.

Mt Chilbo is divided into Inner Chilbo, Outer Chilbo and Sea Chilbo.

Figuratively speaking, Inner Chilbo is feminine as it looks quiet and mellow, whereas Outer Chilbo is masculine because of its magnificent, awe-inspiring scenery.

In Outer Chilbo, there is Hwangjin Hot Spring where hot water of about 50°C is gushing out in hundreds of tons per day.

Sea Chilbo spanning a 40km-long coastline presents a gorgeous view—overhanging cliffs, rocky islets and caves, arched bridge capped with pine trees, etc. Sea Chilbo Talmun Cave is the biggest sea cave in Korea, 10m high, 5m wide and 8m deep.

There is a nature reserve in the mountain, which abounds in fauna and flora.

### **13. Mt Jiri**

Located in the southern part of the Korean peninsula (Hamyang and Sanchong counties, South Kyongsang Province), Mt Jiri soars 1 915m (Chonwang Peak) and has a circumference of over 200km. For its majestic appearance, limpid streams rushing down the ravines and rare species of plants, it has been known as one of the

famous mountains in Korea from olden times and is counted among its eight scenic spots.

#### **14. Mt Halla**

Located in the middle of Jeju Island in the South Sea of Korea, Mt Halla is 1 950m above sea level. A mountain of volcanic origin, it is mostly covered with basalt rocks.

On the top of the mountain, which is conical in shape, is a crater lake called Lake Paengnok.

At a point about 8km southwest of the lake are found over 500 rocks of all shapes and dense forests nearby, unfolding a mysterious view.

There are more than 350 parasitic volcanoes in the mountain, over 200 of which lie beyond 1 000m above sea level.

Strong wind and heavy precipitation characterize the mountain. Snow is not piled up at the foot of the mountain but it remains on the top until April.

The mountain is home to more than 1 700 species of plants ranging from tropical and subtropical to subarctic ones.

Also, it affords habitats for over 180 species of birds and 80 species of butterflies.

#### **15. Mt Sorak**

Mt Sorak (1 708m) lies midway down the Thaebaek Mountains in the southern part of the Korean peninsula.



It is mainly composed of granite-gneiss, biotite granite, granite porphyry and red granite; diorite and porphyry occur in some of its parts.

A watershed divides the mountain into Outer Sorak in the east and Inner Sorak in the west. The former is subdivided into North Outer Sorak and South Outer Sorak, and the latter into North Inner Sorak and South Inner Sorak.

The mountain presents an endless variety of wonderful scenery—Taesung Falls, one of the three famous waterfalls in Korea, and many other waterfalls, Ulsan Rock and other odd-shaped rocks, green woods and clear water in the valleys, and old buildings such as Sinhung and Paektam temples.

## **16. Mt Jongbang**

Mt Jongbang, rising 481m above sea level, borders Sariwon, North Hwanghae Province, in the central part of the Korean peninsula. The mountain is called Jongbang because its ridges are connected in the shape of a regular square.

It soars high over other mountains nearby, commanding an extensive view of Jaeryong Plain. The mountain is composed of quartzite and schist. The peaks coming in myriad shapes through age-old weathering, cliffs and rocks rising beyond 100m above sea level, many species of flowering plants, thick forests and

mineral springs carrying many legends—all afford wonderful views.

## **17. Mt Suyang**

Mt Suyang is located in South Hwanghae Province in the midwestern part of the Korean peninsula. It is 946m above sea level (Sollyu Peak) and extends about 12km east and west and about 10km north and south.

The climate is characterized by high temperature, heavy precipitation and recurrent fog in spring and summer. Because of its location at a point dividing the broadleaf-forested temperate zone into north and south, the mountain is rich in plants, including rowan in the north and *Styrax obassia*, *Carpinus laxiflora* and lime trees in the south.

In particular, there is a plant reserve in the mountain. It is the sole habitat of *Carlesia sinensis* Dunn, which is the only genus of the only family worldwide.

The mountain boasts breathtaking views of peaks, ridges, rocks, clear streams, thickly-wooded valleys, waterfalls and fords.

## **18. Mt Ryongak**

Mt Ryongak (293m) is located in Mangyongdae District, Pyongyang.

It has been known as “Mt Kumgang of Pyongyang”

for its harmonious beauty—odd-shaped rocks standing high against the sky, fragrant flowers in full bloom, thick forests and reddening maples in autumn. *Ryongak* means a dragon ascending to the sky.

The mountain has a steep slope of 30 degrees. Halfway up the mountain is a crystal-clear, cold spring that gushes out of the rocks in all seasons.

It is inhabited by such rare plants as *Clerodendron trichotomum*, lime tree, zelkova tree and *Ligustrum obtusifolium*, as well as pipsissewa, *Amitostigma gracile* and other plants, each being the only species of the relevant genus.

It also boasts three natural monuments—zelkova, *Toona sinensis* and pagoda tree.

The beautiful mountain commands an extensive view of Pyongyang and fertile farmlands around it.

## **19. Mt Taesong**

Sandwiched between Taesong and Samsok districts in Pyongyang, Mt Taesong is 270m above sea level. The name means a mountain with a big castle.

It is surrounded by Kuksa, Somun, Jangsu, Ulji and Jujak peaks and Pukjang Hill, all connected in the shape of a folding screen. Along the ridge of Jujak Peak, extending southwestward, lie two long and wide valleys.

The mountain is covered with evergreen pine trees,

so it looks green even in early spring and late autumn. For its unique beauty it has been known as one of the eight scenic spots of Pyongyang since olden times.

It is inhabited by such animals as pheasant, migratory grosbeak, oriole, woodpecker, grey-backed starling, roe deer and hare. There are also Tongchon, Michon and other artificial lakes, various ponds including those for carp and deer, beautiful waterfalls and historical relics that date back to the period of Koguryo.

## **20. Moran Hill**

Moran Hill is in the heart of Pyongyang, rising 95m above sea level.

It used to be called Mt Kumsu, meaning a silk-embroidered mountain, and then Moran Hill, because it resembles a peony flower.

At the foot of sharp-cut Chongnyu Cliff, where flowers and trees thrive in different seasons, flows the Taedong River. Pubyok Pavilion on the top of the cliff presents a magnificent view. From olden times, greeting spring on Ulmil Pavilion and viewing the moon on Pubyok Pavilion are counted among the eight scenic spots of Pyongyang.

Choesung Pavilion is the highest spot in Moran Hill, bounded by round, low peaks in the south and west, with three valleys in between.

The hill is inhabited by over 100 species of trees

including pine, fir, Korean pine, trifoliolate pine, *Catalpa ovata*, linden and poplar. Birds, over 70 species in all, flock to the hill in different seasons.

## **21. Chol Pass**

Chol Pass rises 677m above sea level in the central part of the Korean peninsula. It is a steep pass that is said to have 99 bends along the 16km-long path upwards and again 16km-long path downwards.

It is surrounded by high mountains exceeding a thousand metres such as Mt Phungnyu (1 023m) and Ryondae Peak (1 090m).

It has a steep slope in the north and a gentle one in the south.

Its topographical features make the pass a natural fortress, so it has been used as a transport hub since olden times.

The pass served as the main route between Hamgyong Province and Seoul; now it is a traffic centre that ensures political, economic and cultural ties between the north and south of Kangwon Province.

The mountain path is lined with royal azaleas.

## **22. Masik Pass**

Located in the Masikryong Mountains, Kangwon Province, it is 768m above sea level. It was called Masik

Pass (or Masu Pass) because even horses had a break climbing up the mountain pass.

This pass used to be a key link connecting the east and west of central Korea. The east slope is very steep but the west one is relatively gentle. From olden times, it was an important transport channel in the central part of the country.

The forests around the pass are thickly wooded with broadleaf trees such as oak, linden and *Betula schmidtii*, and pine groves thrive at the foot of the mountain. The area is also abundant with such plants as royal fern, bracken, wild vine, tara vine, *Schizandra chinensis* and *Atractylodes japonica*.

### **23. Ahobi Pass**

Ahobi Pass, 648m above sea level, is on the borders of Ryongpho-ri, Poptong County, Kangwon Province, and Kuryong-ri, Yangdok County, South Phyongan Province.

The main bedrock is granite.

The pass has been eroded by the Rimjin River and the Songgang Stream, a tributary of the Nam River.

It is connected with high mountains in the north and south. The east slope is gentler than the west one.

Broadleaf trees such as oak, maple and *Betula platyphylla* are ranged in this area.

Since olden times the pass has served as a key link connecting the east and west of Korea.

## **24. Mungyong Pass**

Mungyong Pass is located on the borders of Mungyong, North Kyongsang Province, and Koesan County, North Chungchong Province, in the southern part of the Korean peninsula.

Also called Rihwa Pass, it has an elevation of 548m above sea level.

It was formed in the course of downthrusting in the Sobaek Mountains that resulted from erosion by the Joryong Stream, a tributary of the Raktong River, and the Ssang Stream, a tributary of the Tal Stream. The pass has a precipitous ridge and gentle slopes.

Since olden times it has served as a major route connecting the Kyonggi and Ryongnam areas.

## **25. Plateaus**

In Korea there are the Paekmu Plateau, Kaema Plateau, Phyonggang-Cholwon Plateau, Miru Plain (Singye-Koksan Plain), Jinan Plateau, Ryongso Plateau, etc.

## **26. Kaema Plateau**

The Kaema Plateau is an elevated peneplain covering a vast expanse of highland in northern Korea.

Called the roof of Korea, the plateau has an area of 14 300 sq km and an average elevation of 1 340m.

Its southern section is 400-500m higher than the northern one.

It is far away from the sea, with a mountain range of over 1 500m above sea level in between, so it is hardly affected by the sea. As it is open northward, it is largely affected by the continent.

Tributaries belonging to the water system of the Amnok River, such as the Hochon River, Jangjin River and Samsu Stream, flow through this plateau. In the river valleys are Lake Pujon, Lake Rangnim, Hwangsuwon Reservoir, etc.

The soils are mostly orthic luvisols, those at relatively high elevations podzolic soil, and those in the ridges exceeding 2 000m mountain meadow soil.

Having been abandoned for centuries, the plateau has been turned into one of the biggest hubs of highland agriculture in Korea.

## **27. Paekmu Plateau**

Located in the northern part of Korea, the Paekmu Plateau is the second largest plateau in Korea, next to the Kaema Plateau. It has an area of 6 520 sq km and an average elevation of 1 260m above sea level.

According to the characteristics of its genesis and topography, it is divided into the Paektu Plateau west of the Sodu Stream and the Musan Plateau east of the



stream; the Sodu Stream is a part of the Paektu volcanic zone.

The area north of Hohang Pass on the Paektu Plateau is very flat, so from olden times it was known as Chonphyong, which means a plain in the sky. Paektusamcholli Plain is located in this area.

Found on the plateau are the brooks flowing through the Paektu Mountains and other neighbouring ranges, which belong to the water systems of the Amnok and Tuman rivers, and natural lakes such as Lake Samji.

The plateau is located in the highlands, far away from the sea and bounded by high ranges in the east and south, so it is hardly affected by the sea and the climate is influenced by the cold wind from northwest. As a result, it has the coldest continental climate in Korea.

Biting cold persists in winter but summer is short and cool. The wind blows hard, particularly northwesterly in winter.

Pumice soil, brown forest soil and alluvial soil, as well as orthic luvisols, are distributed on the vast area. The Musan Plateau is a dissected plateau formed by weathering.

The Paekmu Plateau remained undeveloped before Korea's liberation, and now modern, large farms thrive in the area, making it a reliable base for highland agriculture and timber production.

## **28. Ryongso Plateau**

The Ryongso Plateau has an area of 4 740 sq km and an average elevation of 750m above sea level.

*Ryongso* means west of a mountain pass. The plateau is located in the west of various passes such as Onjong Pass and Taegwan Pass in the Thaebaek Mountains, the range forming a divide between the slopes of the East and West seas of Korea. It is also called the Thaebaek Plateau because the most part of it is in the Thaebaek Mountains, with Mt Thaebaek being the major mountain in the range.

Granite and granite-gneiss form the most part of the bedrock; basalt in the Phyonggang-Cholwon region in the north and limestone in the Nyongwol region in the south.

The area descends in elevation from the Thaebaek Mountains to the west.

The plateau is characterized by great variations in temperature, particularly between cold and hot days and between day and night. It receives heavy precipitation and the annual average temperature is 10.1°C, the monthly average temperature being -6.8°C in January and 25.1°C in August.

It is mostly covered with forests, so it is suitable for timber production.

Field crops such as potato and corn are grown and cattle and other species of livestock are raised in this area.

## **29. Sepho Area**

The Sepho area encompasses Sepho, Ichon and Phyonggang in Kangwon Province, all on the Phyonggang-Cholwon Plateau. The area is called *Sepho* because, as a part of the Chugaryong Graben, it is visited by strong wind, heavy snow and copious rain. It is composed of basalt, so it remained uncultivated for long as the ground becomes muddy after rain and cleaves under the sun.

According to the plan of President Kim Il Sung and General Kim Jong Il and under the energetic leadership of the respected Marshal Kim Jong Un, the area is now being turned into a large-scale livestock farming base with tens of thousands of hectares of natural and artificial grassland.

## **30. Plains**

Plains make up 20.7% of Korea's territory. They include Pyongyang Plain, Yoltusamcholli Plain, Jaeryong Plain, Yonbaek Plain, Kimpho Plain, Honam Plain and Jonnam Plain.

## **31. Pyongyang Plain**

Pyongyang Plain is located near the lower reaches of the Taedong River centred on Pyongyang.

The plain is 950 sq km in area and extends about 40km north and south and about 30km east and west.

It is a typical low-lying peneplain. Partly composed of

alluvial soil near the shores of the Taedong River, Mujin Stream, Konyang River and others, it is for the most part hilly ground of limestone downthrust and flattened through age-old weathering, corrosion and erosion.

With an elevation of 10-20m above sea level and a relative height of 20-30m on a broad area, the plain is dotted with gently undulating hills. So it is also called Pyongyang peneplain. The bedrock is mainly composed of limestone and dolomite, as well as sandstone, siltstone, slate, shale and others.

The plain is mainly used for crop cultivation.

### **32. Yoltusamcholli Plain**

Yoltusamcholli Plain, also called Anju Plain, is located in the northwest of South Phyongan Province on the west coast.

The plain extends about 35km north and south and about 20km east and west. It borders the shore of the West Sea of Korea in the west and overlaps with Anju, Mundok, Sukchon and Phyongwon in the east. It lies at the western foot of the Chongnyong and Osok ranges.

The flat area of the plain is 5-20m above sea level.

The plain comprises patches of alluvial soil formed by layers of sediment near the Chongchon River, tidal flats by the sea and a hilly area created through age-long erosion and sedimentation.

It descends in elevation to the west.

Granite, granite-gneiss and schist form the most part of the bedrock.

Huge deposits of lignite and peat are buried in the area.

It has a maritime climate, with the annual temperature averaging 9.5°C, annual precipitation 971.5mm and annual wind speed 2.14m/s affected by a strong wind from the sea.

It is mainly made up of alluvial, tideland and paddy soils, and the hills are covered with brown soil.

Medium and small rivers and streams flow through the plain into the West Sea of Korea and there is a ramified network of waterways that belong to the Phyongnam Irrigation System in South Phyongan Province. Such crops as rice, corn, beans, radish, cabbage, apple, pear and peach are cultivated on the plain.

### **33. Jaeryong Plain**

Jaeryong Plain extends along the shore of the Jaeryong River, centred on Jaeryong and Anak counties, South Hwanghae Province, in the midwestern part of the Korean peninsula.

It was created through centuries-long accumulation of river sediment on a slowly-rising seabed that had been downthrust in tectonic processes.

The second largest in Korea, the plain has an area of

1 300 sq km and extends 37km east and west and 40km north and south. The average elevation is approximately 20m. It is 2-5m near the middle and lower reaches of the Jaeryong River, some parts of the plain lying on a level nearly the same as the sea level.

It is mainly composed of gneiss, schist, conglomerate, sandstone, siltstone, shale, etc.

The average temperature is 10.4°C annually, -5.4°C in January and 24.1°C in August.

The annual precipitation averages 967.15mm. More than half of it falls from July to August. The wind is not so strong; it blows southwesterly in summer, and westerly or northwesterly in winter.

The Jaeryong River flows through Jaeryong Plain, joined by the Sohung River and the Unpha Stream on the right and the So River and the Jik, Chokso, Jonthan and other streams on the left. The plain is mostly composed of paddy and alluvial soils, and its periphery of brown forest soil. Generally, the soils of the plain have thick layers and are rich in humus.

Since olden times the plain has been known as one of Korea's granaries and numbered among the biggest rice producers in the country, because it is very fertile and abundant in water sources. The West Sea Barrage shields it from infiltration by seawater, and the fields are irrigated by a maze of waterways connected with Lakes

Unpha and Sohung, and Kuwol, Unbong, Pogu, Sowon and Myongsu reservoirs.

### **34. Yonbaek Plain**

Yonbaek Plain covers an area of 1 190 sq km within the confines of Chongdan, Yonan and Paechon counties on the southeast coast of South Hwanghae Province.

The plain was created by the upheaval of shallow seashore and sedimentation in the West Sea of Korea. The bedrock is mainly composed of Archaean gneiss and schist.

The plain is bounded on the north by the hills of about 100m above sea level, and on its northern tips are the spurs of the Suyang and Myorak Mountains.

Rising 20-50m above sea level, it descends in elevation from north to south, ending with a large area of tideland on the coast.

Running through the plain are rivers and streams of varying lengths such as the Osa, Hwayang and Rajinpho streams, and the Hangyo Stream, a tributary of the Ryesong River, all flowing into the West Sea of Korea.

The average temperature is 11°C annually, -3.9°C in January and 24.5°C in August. The cumulative temperature over 10°C is 3 818°C. The annual average precipitation is about 1 166.3mm.

The plain is mainly composed of paddy soil, alluvial soil, tideland soil and reddish brown soil.

Another granary in Korea, the plain boasts many reservoirs, pumping stations and drainage facilities. It also has a cobweb of the waterways of the Yonbaek and Chongdan irrigation systems, as well as the Ryesonggang Waterway.

### **35. Kimpho Plain**

Kimpho Plain occupies an area of 600 sq km, comprising Kimpho, Koyang, Phaju and Puchon (near the lower reaches of the Han River), Kyonggi Province, in the southern part of the Korean peninsula.

It is an alluvial plain created through sedimentation near the Han River and its tributaries.

Sandy soil forms the central part of the plain.

It has conditions favourable for irrigation as the Han River and its tributaries, such as Kongnung, Changnung and Munsan streams, flow through it.

It is mainly composed of shore deposit soil, reddish-brown forest soil and tideland soil.

### **36. Honam Plain**

Honam Plain is located between the lower reaches of the Kum River on the west coast of North Jolla Province and the Roryong Mountains in the southern part of the Korean peninsula.

One of the biggest plain in Korea, it is 1 860 sq km in



area. Once a peneplain of granite and schist, it was mostly formed by the sediment that had been carried along by the Kum, Mangyong and Tongjin rivers, as well as the sea.

The plain is mainly composed of alluvial soil and the coastal area of marine soil. Its periphery remains a peneplain.

It lies low and flat at an elevation of 20m above sea level. The annual average temperature is 26.1°C. The annual average precipitation is about 1 160mm.

The plain is mainly composed of paddy soil and reddish brown soil; in some parts of tideland soil and alluvial soil.

Since olden times it has been known as one of Korea's granaries for its natural conditions favourable for agriculture.

### **37. Jonnam Plain**

Jonnam Plain, 960 sq km in area, extends near the shore of the Yongsan River in the southern part of the southwest lowland of the Korean peninsula.

The plain was mainly formed by sedimentation near the Yongsan River, the area at the foot of mountain ranges remaining a peneplain. It is low and flat, except some mountains of about 300m above sea level. It is composed of paddy soil, reddish brown soil, alluvial soil and red soil.

The annual temperature averages 13.1°C and the annual precipitation 1 300mm.

It was one of Korea's granaries.

### **38. Caves**

Korea has numerous caves: limestone caves such as Paengnyong Cavern, Songam Cave and Ryongmun Cavern; sea caves such as Kumnan Cave in Thongchon County and Chongdo Abrasion Cave in Hongwon County; and lava caves such as Kumnyong Cave in Jeju Island.

### **39. Paengnyong Cavern**

Located in Kujang County, North Phyongan Province, in the northwest of the Korean peninsula, this natural cavern is a typical limestone cave in Korea.

An ensemble of fabulous scenes, it has various sizes and shapes of stalactites, stalagmites, stone flowers, waterfalls, ponds and rocks, all formed through the centuries-long process of limestone being eroded by rain and underground water.

The major section, about 950m long, has Mammothdong with a huge stalagmite reminiscent of a mammoth of the glacial period, and Hyongjethap with two 5m-high stalagmites resembling brothers. It also has a high waterfall, a cold water spring called Ilphumchon (water of prime quality) and Myongsasimni, a flat sandy area that is 72m long, 11m high and 10m wide on average.

The Miro section with seven wings starts from a narrow hole on the left side of Myongsasimni. It has

many scenic spots such as Yubangdong with stalactites on the ceiling resembling the breasts of a cow; Mandapdong with a patterned floor reminiscent of a vast expanse of paddy fields, which was formed through the differential fluxing of limestone; Pongsodong with a hive of stalagmites; and Phododong with stalactites resembling grapes.

The Sanhae section in the shape of a staircase extends about 400m. It has Pakjwidong meaning a roost of bats; Unggoldong associated with a legend to the effect that a bear came into the cave on a cold winter day and died in it because it got lost; and Sanhodong with a coral reef of stalagmites.

#### **40. Ryongmun Cavern**

The Ryongmun Cavern is located at the foot of Mt Ryongmun lying on the same range as Mt Myohyang, one of Korea's celebrated mountains.

Known as an underground scenic beauty, the cavern is something of a wonder of nature, which was formed through the centuries-long process of the limestone being dissolved and eroded by underground water.

The cavern has two major sections and more than 30 wings.

It offers scenery that is fantastic and marvelous, made up of over 20 beauty spots including Kwanmangdae

(observatory), Manmuldong (*manmul* means myriad forms, and *dong* section of a cavern), Phungnyondong (rich-harvest section), Sokhwadong (stone-flowers section), Paekhwadong (white-flowers section), Kunganggung (palace of Mt Kungang), Paektumilyongdong (secret-camp-on-Mt Paektu section), Chonsangragwon (fairyland in heaven), Kwangmyongdong (bright-future section), Posokdong (jewel section), Hyongjedong (brothers section) and Ryongmun Plaza.

The walls and ceiling of the Ryongmun Plaza, the last leg of the tourist course, is decorated with stone flowers in bloom and various shapes of small stalactites and stalagmites, all forming fantastic scenery.

#### **41. Kumnan Cave**

Located in Kumnan-ri, Thongchon County, Kangwon Province, on the east coast, the Kumnan Cave is a sea cave formed through the centuries-long process of basalt being eroded by the waves.

Designated as a natural monument, the cave is 16m long, 5-7m high and 4-5m wide.

The depth of water is some metres at the entrance of the cave but inside the pit it is less than 0.5m. The cave is a habitat for seabirds such as gull and wild duck.

Surrounded by hexagonal rocks, pine trees on the cliff and the East Sea of Korea, it offers wonderful scenery.

## **42. Chongdo Abrasion Cave**

Located on the beach of Sohung in Hongwon County Town, Hongwon County, South Hamgyong Province on the east coast, the Chongdo Abrasion Cave is on a knoll (30m).

Once an islet, the knoll was connected with the land by sea and river sediment. The cave is composed of granite-gneiss.

Two recesses of the bay were turned into cliffs through coastal erosion and their vulnerable lower parts were worn away to form the cave.

The cave, hemispherical in shape, is 6m high and 3.7m wide on average.

As it is open to the sea, it is inundated when there are high waves.

## **43. Kumnyong Cave**

The Kumnyong Cave is located in the northeast of Jeju Island in the heart of the South Sea of Korea.

It is also called Kumnyongsa Cave (*sa* means a snake) as it is said that the cave was inhabited by a big snake in old times.

Its entrance is at an elevation of 60m above sea level. It is an S-shaped basalt cave formed by the subsiding of a terrain. It is divided into three sections.

The height of the entrance is 11m and that of the

passageway is 19m. The first section is 52m long; the upper part of the second section 54m and the lower part 156m; and the third section 352m. The total length of the cave is 705m, including that of the subsided segments.

The cave has a lava cascade, stalactite, lava stairs, etc. Inside it can be seen an endless variety of shapes formed as a result of surface solidification of a lava flow, and calcareous sediment mixed with shells that were scattered about on the sandy beach.

The subsided part links the cave with the Manjang Cave.

#### **44. Rivers**

Korea has numerous rivers and streams, those over 5km long numbering about 6 600.

Among them, 131 rivers and streams are more than 50km in length. Those longer than 400km are the Amnok, Tuman, Taedong, Kum, Han and Raktong rivers. They are called the six major rivers of Korea.

Korea is numbered among the countries with a ramified network of rivers and streams. On average, 0.5km of a river course flows in an area of 1 sq km.

Innumerable valleys and heavy precipitation explain the large numbers of rivers and streams and their big volume of flow.

## **45. General Characteristics of Rivers and Streams**

First, the rivers and streams in Korea are abundant with water resources of good quality.

The main source of their waters is precipitation; Korea receives 966.3mm of precipitation annually, far beyond the world average (840mm).

The basins of the rivers and streams have a large catchment area as they are mainly covered with forests. In other words, there is plenty of flow along their courses all the year round.

As the country is pollution-free and prioritizes land and environment protection, excellent quality of water is ensured.

Second, there is a striking contrast between the rivers and streams flowing through the slopes on the three seas of Korea.

The major watersheds of the country are concentrated on the east coast. That is why the rivers and streams flowing through the slopes on the east coast are short and swift-running. Furthermore, they have less tributaries and their basins are narrow.

On the contrary, those on the west and south coasts are long and slow-running. They have many tributaries and their basins are wide.

Third, they are dictated by mountains and the volume of flow varies greatly with the season.

As Korea is largely mountainous, most of its rivers and streams have many rapids and waterfalls. Along their upper reaches are found large quantities of stones and gravels on riverbeds. They are characterized by steep gradients.

The volume of flow decreases in winter and spring but it increases rapidly in summer.

#### **46. Amnok River**

The river rises at the southwestern foot of Mt Paektu in Samjiyon County, Ryanggang Province, in the northern part of Korea, and empties into the West Sea.

It was named so, because it was rich in wild ducks and green reeds.

It is 803km long, making it the longest in Korea.

The basin of the river covers an area of 64 739.8 sq km, of which the Korean part is 32 557.7 sq km.

It has 885 tributaries, big and small. Those longer than 100km include the Hochon, Jangjin, Pujon, Jangja and Chungman rivers, as well as the Samgyo Stream.

Sand and earth carried along by the river were piled up in its lower reaches, forming various islands such as Wihwa, Ryucho, Hwanggumphyong and Pidan.

The navigable portion of the river is nearly 700km.

The annual average precipitation in the basin of the upper reaches is 500-600mm. It increases from the upper to lower reaches.



The basin is abundant in forest resources. The upper reaches are covered with such tree species as larch, *Abies nephrolepis*, spruce, Korean poplar, *Betula platyphylla*, *Betula ermani* and linden. The middle and lower reaches are also densely forested.

The basin is rich in precious mineral resources including gold, nickel, copper, coal, iron sulfide and kaolin.

The river and its tributaries are inhabited by over 80 species of fish such as carp, goldfish, cornet fish, pond smelt, *Brachymystax lenok*, eel, snakehead, grey mullet, sea bass, *Idus waleckii* and *Sarcocheilichthys sinensis lacustris*.

Soil patterns of the shore differ; orthic luvisols in the upper reaches and brown forest soil in the lower reaches.

The river comes first in the amount of hydraulic resources as it adjoins many precipitous valleys and rapid, big streams.

## **47. Tuman River**

The Tuman River rises southeast of Mt Paektu and empties into the East Sea of Korea. It marks the boundary of Korea with China and Russia.

The river was named so, because it has many tributaries.

It is 547.8km long, the second longest river in Korea. Its basin covers an area of 32 920 sq km, of which 10 565 sq km is on the Korean side.

Its 287 tributaries over 5km long include the Sohongdan, Sodu, Yonmyon, Songchon and Oryong streams.

The upper reaches of the river adjoin a basalt area, which is a part of the Paektu volcanic zone, and the Musan Plateau, an area of granite and granite-gneiss; most of the middle reaches middle mountains; and the lower reaches low mountains, alluvial plains and sandy hills.

The upper reaches are mainly covered with needle-leaf trees such as *Abies nesphtolepis*, spruce, fir and larch, and the middle and lower reaches mixed forests of larch, pine, oak, alder and aspen.

The upper and middle reaches assume the characteristics of a mountain river, the former abounding in rapids and waterfalls, and the latter adjoining low terraces and flood area.

The slope is very gentle in the lower reaches and this section comprises dozens of islets, big and small, formed as a result of changes in courses and sedimentation, such as Onsong, Ryuda, Sahoe and Khun islands. There is a delta in the estuary of the river.

Found near the lower reaches are sandy hills formed by wind, alluvial plain created by sedimentation and natural lakes which are the products of changes in courses and sedimentation.

On average, the basin receives 580.8mm of precipitation annually.

There are dozens of fish species; *Idus waleckii* indigenous to the river; char and other cold water species; anadromous species such as salmon, trout and dace; and carp and goldfish.

#### **48. Raktong River**

The Raktong River rises from Mt Hambaek in the southern part of the Korean peninsula and flows into the South Sea of Korea. It is 523.2km long, the third longest river in Korea, and its basin is 23 370 sq km.

It was named so, because it was in the east of Karak (Kaya), a feudal state that existed 1 500 years ago, and it occupied a territory centred on the present-day Kimhae.

The lower reaches of the river lie in the east of Kimhae.

More than 510 tributaries, each longer than 5km, flow into the river.

#### **49. Han River**

The Han River rises from Mt Taedok in the southern part of the Korean peninsula and discharges into the West Sea of Korea.

It is 502.8km long, the fourth longest river in Korea, and its basin is 34 395.7 sq km.

It was named after an old region located near its lower reaches. About 1 500 years ago, the region around the lower reaches centred on Seoul was called Han or Hansanno.

The river has hundreds of tributaries including the Pukhan and Rimjin rivers and the Hanthan Stream.

## **50. Taedong River**

Rising at the foot of Mt Rangnim (Hanthae Pass), the boundary between Taehung County, South Phyongan Province, and Jangjin County, South Hamgyong Province, the river flows through Pyongyang and empties into the West Sea of Korea.

It is 450.3km long, the fifth longest river in Korea. Its basin is 20 247 sq km and the navigable portion is 260km.

Its tributaries, including the Nam, Piryu and Pothong rivers, add up to 619.

It was called Phaegang, Phaesu or Wangsonggang, which means a river in the capital city.

The name of the river means a big river joined by various streams.

The slope is steep in the upper reaches and very gentle in the middle and lower reaches.

The basin of the river comprises low mountains and hilly plains, except some mountains, about 2 000m high, near its upper reaches. In addition there are Rungna,

Yanggak, Ssuk, Turu, Tudan, Pyokji, Konyu and other islands, all composed of alluvial soils carried along by the river.

Paleozoic limestone, slate, sandstone and shale make up approximately 70% of the basin.

The basin is rich in mineral resources such as lead, zinc, gold and iron. Particularly, it has huge deposits of high-grade anthracite.

The main soils of the basin are orthic luvisols and brown forest soil. Alluvial soil and paddy soil occur in some of its parts.

The basin is abundant in forest resources, particularly needle-leaf and broad-leaf trees such as pine, oak, larch, fir, Korean pepper bush, Korean pine, poplar, Mongolian oak and cork oak.

On average, it receives 994.9mm of precipitation annually. The precipitation increases from the lower to upper reaches.

It is home to more than 60 species of fish. In the lower reaches there are carp, goldfish, sea bass, catfish, eel, mandarin fish, cornet fish and minnow, and in the upper reaches char and *Brachymystax lenok*.

Today, with the construction of the West Sea Barrage, Mirim Barrage, Ponghwa Barrage, Sunchon Barrage, Songchon Barrage and others, the Taedong River has been turned into an artificial lake.

## **51. Kum River**

Rising from Mt Phalgong in Jangsu County, North Jolla Province, in the southern part of the Korean peninsula, the river flows into the West Sea of Korea.

It is 409.8km long and its basin is 9 899.5 sq km, one of the longest rivers in Korea.

The bedrock of the basin is mainly composed of granite-gneiss, granite, schist and quartz porphyry.

In the upper reaches it is narrow, indented and swift-running; in the middle reaches it is wide and the slope is gentle; and in the lower reaches it is wide and the slope is only 0.4°.

Mountains account for 73% of the basin and they are covered with pine, oak, alder and other trees.

The annual precipitation of the basin averages 1 100-1 360mm, and 60-70% of it falls in summer.

The river is teeming with such fish species as carp, goldfish, sweetfish, catfish, eel, snakehead, grey mullet, sea bass and icefish.

The basin comprises Naepo, Ronsan, Sochon and other plains.

## **52. Lakes**

There are thousands of lakes, big and small, in Korea.

Over 100 of them are natural lakes, five larger than 5 sq km and nine than 3 sq km.

Artificial lakes are greater in number and size than natural ones. There are more than 1 700 artificial lakes, 25 of which are larger than 5 sq km.

### **53. Natural Lakes**

Natural lakes in Korea include Lake Chon on the top of Mt Paektu, Lake Samji, Lagoon Sobon, Lagoon Kwang, Lagoon Man, Lake Jangyon, Lake Tongjong, Lagoon Ha, Lagoon Tongbon, Lake Sijung, Lake Mugye, Lagoon Hwajin, Lake Ryong, Lake Kyong, Lake Haptok, Lagoon U, Lake Paengnok, Lake So, Lagoon Samul, Lake Konggom and Lake Uirim.

### **54. Lake Chon on the Top of Mt Paektu**

Nestling on the top of Mt Paektu, Lake Chon is suggestive of a beautiful picture.

The lake was named so for the impression of its sublimity. It was also called Ryongdam or Ryongwangthaek, meaning “a lake where the Dragon King lives.”

The following are part of the results of a general survey of the lake:

Size: 14.4km in circumference, 4.64km at its longest, 3.55km at its widest, 9.16 sq km in area

Depth: 384m at its deepest, 213.3m on average

Hydrological information: annual change in water level 1.6m

Elevation of the lake surface: 2 190.15m

Water temperature on the surface (annual average):  
2.2°C

Thickness of ice: 1.5m

Thickness of snow on ice: 2m

Freezing period: from early December to mid-June

Transparency of water: 16m

Water colour: light green

Gross volume of water: 1 955 million cubic metres

Annual precipitation: 2 501.3mm

Animals and plants: 354 plant species, one fish species (char), one species of amphibian (*Rana temporaria*), 34 species of birds, 15 species of animals, 151 species of insects

The lake is of a tapered glass shape.

It is 384m at its deepest, the deepest of its kind in Korea.

At the bottom of the lake there are three big holes, where about 3 000 cubic metres of water gushes out every day.

There is a hot spring of 73°C on the shore jutting out in the southwest of the lake just below Janggun Peak.

## **55. Lake Samji**

Lake Samji is located about 5km north of Samjiyon County Town, Samjiyon County, Ryanggang Province,



in the northern part of Korea. It is so called because there are three lakes side by side (*sam* means three, *ji* lake).

The first lake is 0.36 sq km in area, 2.3km in circumference, 0.8km long and 0.5km wide; the second lake is 0.04 sq km in area, 1.1km in circumference, 0.3km long and 0.1km wide; the third lake is 0.06 sq km in area, 1.1km in circumference, 0.3km long and 0.2km wide.

They were formed as a result of the stream, which had been running northward in the present-day Samjiyon area, having been blocked by lava flowing down from the volcanoes on Mt Paektu and other neighbouring mountains about a million years ago.

In the wake of the emergence of the lakes, the pumice stones from the volcanoes piled up on them, greatly changing their appearances.

The bedrock of the area is composed of basalt and the 3-5m thick layer of the surface is the one of pumice stones.

The lake drains nowhere.

The average temperature is 0.4°C annually, -17.4°C in January and 15.8°C in August.

The annual average precipitation is 955.1mm and about 60% of it falls from June to August.

Various species of aquatic plants and fish, including carp, occur in the lake.

It has sandy shores and crystal-clear water.

Surrounded by dense primitive forests, home to *Betula platyphylla*, *Betula ermani*, *Abies neshrolepis*, spruce and other trees, the lake is picturesque.

## **56. Lagoon Kwang**

Lagoon Kwang is located on the border between Hamju and Jongphyong counties, South Hamgyong Province, on the east coast.

It is 9.02 sq km in area, 31km in circumference, 10km long and 0.9km wide.

It is the third largest among Korea's natural lakes, next to Lagoon Sobon and Lake Chon.

Originally an inlet, it was created as a result of geological upheaval and sedimentation.

Over 60 rivers and streams of moderate lengths, such as the Kwangpho River, Taho and Pongdae streams, flow into the lagoon.

The bedrock of the area is composed of Archaean gneiss and there is a thick layer of sand over it.

The lagoon has muddy and sandy soils at its bottom.

There are low mountains and hills southeast of its shores and Hamhung Plain in the north and west. There are also some islets in it and, on its fringes, swamps of various sizes such as the one abundant in shellfish, marshland and paddy fields. The annual volume of water flowing into the lagoon totals 308 660 000 cubic metres. It is inhabited by forage

grass, plankton, carp, goldfish, corbicula, pond-snail, etc.

Near it is a modern duck farm.

## **57. Lagoon Sobon**

The largest natural lake in Korea, Lagoon Sobon is located in Rason on the northeastern tip of the country.

An oxbow lagoon, it is 16.12 sq km in area, 41.2km in circumference, 11km long and 1.5km wide.

Once a big bay, the area lay near the course of the Tuman River.

With the passage of time the course moved eastward and the soils carried along by the river and falling down the mountains nearby piled up in the mouth and inside of the bay, thus forming the lagoon by the sea.

Except in the south, the lagoon is enclosed by hills less than 300m above sea level. Its west and north shores are dotted with bogs.

It is 4.5m at its deepest. The volume of flow is the largest between July and August and the smallest in June.

The water looks quite yellow and the transparency is 1m.

On the southeast tip it is connected to the sea, so the water is salty.

The bottom of the lagoon is muddy and sandy. It abounds in plankton and other aquatic plants. It is also inhabited by various species of fish including grey mullet, dace, goldfish and flatfish, as well as shellfish

and shrimp. Grey mullet and dace in particular are abundant there.

## **58. Lake Sijung**

A lagoon located in Thongchon County, Kangwon Province, the lake is 2.94 sq km in area, 11.8km in circumference, 3.5km long and 0.8km wide on average.

It was originally an inlet on the east coast, the mouth of which was blocked by sand to form the lake, due to the upthrust of the ground and the wave motion of the sea over a long period.

It was named from a pavilion called Sijung on the shore of the lake.

On the bottom of the lake is a 4-5m thick layer of mud but it is sandy near the sea.

In the east there is a 300m-wide sandy beach, white-tinted, which forms a divide between the sea and the lake.

The average temperature of the area is 11.8°C annually, -1.1°C in January and 24°C in August, and the annual average precipitation is 1 252mm.

The lake is connected to the sea by a small waterway.

For its therapeutic properties the mud is efficacious for the treatment of such illnesses as inflammatory diseases and nervous system disorders.

The lake abounds in fish species including carp, goldfish, silver carp and *Aristichthys nobilis*, as well as

shrimp and shellfish. The lake, limpid and serene, surrounded by densely wooded hillocks and sandy beaches pink-tinted all over with blooming sweet briars, presents a beautiful landscape. The scene is further set off by the pine groves on the sand bank and the surging seas beyond.

### **59. Lagoon Hwajin**

Lagoon Hwajin is located on the east coast in the middle part of the Korean peninsula.

It is 2 sq km in area, 10.5km in circumference, 3.4km long and 0.6km wide.

Originally, it was a bay and its mouth was blocked by sand.

The lagoon extends from north to south.

Its environs are alluvial plains, and pine trees and sweet briars occur in its sandy beach.

The lake affords habitats for salmon, grey mullet and other fish species.

### **60. Lake Paengnok**

Lake Paengnok is located on the top of Mt Halla in the central part of Jeju Island in the South Sea of Korea. The lake is 0.33 sq km in area, about 3km in circumference, and 8m at its deepest. It extends 600m east and west and 500m north and south.

It is a crater lake created in the wake of a volcanic eruption that resulted in the formation of Mt Halla (1 950m).

It was named from a legend that once upon a time heavenly beings drank wine made of *paengnok* (a white deer's antlers) in this area.

It drains nowhere all the year round. The water is replenished by atmospheric precipitation and underground water in the catchment area and reduced by evaporation.

Its fringes are covered with basalt and trachyte stones. The temperature is so low that even in May there is snow in the area. Boreal plants are found there.

## **61. Artificial Lakes**

Korea's major artificial lakes include Lakes Suphung, Unbong, Jangjin, Pujon, Unpha, Yonphung, Sohung and Thaesong.

## **62. Lake Suphung**

Lake Suphung is located in the lower reaches of the Amnok River, the longest in Korea.

The biggest artificial lake in the country that was built with the dams of the Suphung Power Station, it borders Sakju, Changsong and Pyoktong counties in the northern part of North Phyongan Province, and Usi and Chosan counties in Jagang Province, as well as China. It is 298.16 sq km in area, 1 074.7km in circumference, 138.3km long and 1.5-2km wide on average, extending from northeast to southwest along the course of the Amnok River.

The shoreline is crooked and many islets, big and small, including Undu Islet, are found in the lake.

Atmospheric precipitation and underground water are the major source of water. Atmospheric precipitation flows into the lake through the Amnok River, Namchang Stream, Yongju Stream, Tong Stream, Chungman River, Josan Stream, etc.

The catchment area is dense with watershed protection forests.

Because of its immensity in area and depth the lake influences the climate in the surrounding region. The climate in winter is up 1-2°C as compared with the period preceding the construction of the lake.

The lake is teeming with silver carp, carp, goldfish, cornet fish, catfish, etc.

### **63. Lake Unbong**

Lake Unbong borders Jasong and Junggang counties, Jagang Province, in the northern part of Korea, as well as China.

Located midway down the Amnok River, the lake was built for the generation of electric power.

One of the biggest lakes in Korea, it is 104.88 sq km in area, 359km in circumference, 77.5km long and 1.4km wide.

The Amnok River, as well as its tributaries including the Jasong River and Junggang, Konha,

Yonphung and Samphung streams, flows into the lake.

The lake is effective in preventing the flooding of the Amnok River and regulating the water volume of Lake Suphung.

Goldfish, carp, cornet fish, mandarin fish and other fish species are plentiful in the lake.

#### **64. Lake Jangjin**

Lake Jangjin is located in the upper reaches of the Jangjin River in Jangjin County, South Hamgyong Province, in the eastern part of Korea.

The lake is 124km in circumference, 24.6km long, 1.9km wide and 46.08 sq km in area.

The Jangjin River, as well as dozens of its tributaries including Paegam and Sindae streams and the Kuumni River, flows into the lake.

The lake is surrounded by lofty mountains covered with watershed protection forests.

It is teeming with *Hucho ishikawai*, *Brachymystax lenok*, rainbow trout, goldfish, carp, catfish and others, which feed on dozens of species of plankton.

The waters of the lake are diverted for hydroelectric power generation and irrigation of Hamhung Plain.

#### **65. Lake Yonphung**

Lake Yonphung is sandwiched between Anju and



Kaechon, South Phyongan Province, in the western part of Korea.

Built for irrigation purposes in 1956, the lake is 14.87 sq km in area, 89.3km in circumference, 16km long and 0.9km wide.

The catchment area is girded by Mt Chonwang (241m), Mt Songam (365m), Mt Namhae (344m), Mt Ryojong (310m) and other mountains thickly wooded with watershed protection forests—pine, larch, Korean pine, oak, Korean poplar, chestnut, etc.

The major source of water is the Taedong River and atmospheric precipitation.

The waters of the lake flow along the more than 2 000km-long waterway to irrigate the 100 000-odd hectares of cropland in Anju, Mundok, Sukchon and Phyongwon counties.

The lake is used to generate electric power and offers good habitats for carp, goldfish and other fish species. It is very important in preventing the flooding of the Taedong River.

## **66. Lake Unpha**

Lake Unpha lies between North Hwanghae and South Hwanghae provinces in the midwestern part of the Korean peninsula.

Built in November 1977, the lake is 26.64 sq km in

area, 131.7km in circumference, 22.4km long, 1.2km wide and 33.7m at its deepest.

The catchment area is 401 sq km.

It is surrounded by dense forests for watershed protection—pine, oak, acacia, *Populus canadensis* and shrubs.

The major source of water is atmospheric precipitation from the catchment area and the waters from Lake Jangsu.

The lake is used in a comprehensive way to develop the country's economy and improve the people's standard of living—irrigation, power generation, prevention of flooding, fish farming, transport, industrial water, drinking water, etc.

It is inhabited by dozens of fish species including carp, silver carp, mandarin fish, catfish, goldfish and flying fish.

## **67. Waterfalls**

There is a large number of waterfalls in Korea, which is noted for its numerous mountains, valleys, rivers and streams.

Most of the waterfalls are located in the upper reaches of the rivers and streams winding between mountains.

They include the Paektu Falls, Rimyongsu Falls,

Kuryong Falls, Pibong Falls, Isonnam Falls, Chonsin Falls, Ryongyon Falls, Pagyon Falls, Ullim Falls, Tongnim Falls, Suyangsan Falls and Taesung Falls.

The Kuryong Falls in Mt Kumgang, Pagyon Falls in Kaesong and Taesung Falls in Mt Sorak are known as Korea's three celebrated waterfalls.

Many of Korea's famous waterfalls are in its northern half.

### **68. Kuryong Falls**

The Kuryong Falls plunges into Kuryong Pool in Outer Kumgang of Mt Kumgang, a mountain known worldwide as a scenic spot. Along with the Pagyon Falls in Kaesong and Taesung Falls in Mt Sorak, it is one of Korea's three celebrated waterfalls. It also counts among the four spectacular waterfalls in Mt Kumgang.

Noted for its big volume of flow and marvellous beauty, the waterfall is 74m high and 4m wide. And the length of its curving crest line is 84m and that of its face 100m.

Gushing over the edge of a steep broad cliff against a backdrop of a series of peaks centred on Ongnyo Peak, it looks like a silk sheet.

Just below the waterfall is Kuryong Pool, 13m in length.

*Kuryong* means nine dragons. According to a legend,

nine dragons guarded Mt Kumgang. The pool and the waterfall derive their names from this legend.

Over the crotch of the waterfall is found Eight Pools, associated with the legend that eight fairies in heaven would descend there to enjoy its beautiful scenery.

### **69. Pasyon Falls**

The Pasyon Falls, 37m high and 1.5m wide, is located in a valley of the Taehungsan Fort in Pasyon-ri, Kaesong, in the central part of the Korean peninsula.

Over the waterfall lies Pak Pool, 24m in circumference, 8m in diameter and 5m in depth, which sits on a huge rock hollowed out in the shape of a gourd. At its centre is a monolith that is broad enough for several people to be seated on.

Crystal-clear water meanders down a steep valley between Mts Songgo and Chonma in the Ahobiryong Mountains, skirting the monolith in the pool and spouting over the edge of the waterfall.

It cascades down with great rapidity and a tremendous crash, sending up thick clouds of spray.

Below it is Komo Pool, 120m in circumference and 40m in diameter.

The view of the waterfall varies with the season; in spring, cherry, apricot, wild pear, azalea and royal

azalea blossoms come out early; in summer, the forests are in fresh verdure, magnolia blossoms emitting a sweet fragrance; in autumn, maples put on their crimson tints.

## **70. Taesung Falls**

The 100m-high Taesung Falls is located in Mt Sorak in the southern part of the Korean peninsula.

It is noted for its gigantic size and volume of flow in all seasons.

Throwing its rainbow-haunted spray into the air, it discloses a wonderful harmony of myriad scenes—mysterious rocks, overhanging cliffs and dense forests.

## **71. Paektu Falls**

The Paektu Falls is located about 2km southeast of Janggun Peak, the summit of Mt Paektu, on the northern extremity of Korea.

Formed by lava on the volcanic tableland, it is of a staircase shape, 18.3m high and 0.8m wide.

The flow of water from the head of the Amnok River merges with that from the Sagimun Falls, runs along a near-straight course through a sharp-cut valley and then falls off a rhyolite cliff.

At the base of the waterfall is an oval-shaped pool, 20.1m in circumference and 0.75m at its deepest.

It looks like a sheet of silver-grey silk fabric hanging down from Janggung Peak. When the wind is blowing southeastward, it tosses up its silvery spray, forming a beautiful rainbow.

The waterfall in the high mountain steppe is a scenic masterpiece—flowers enveloping the 20m-high cliff in spring, the whole scene blazing with silvery icicles hanging in rows in autumn and frostwork dazzling the eyes in winter.

## **72. Rimyongsu Falls**

The Rimyongsu Falls is located in Samjiyon County, Ryanggang Province, in the northern part of Korea.

Adjoining the Rimyong Stream, a tributary of the Amnok River, the waterfall drops 15m vertically. It is 27m wide and its curving crest line is 23m long.

It cascades down over the edge of a cliff to the right of the Rimyongsu Valley, which was created through basalt erosion in the wake of a volcanic eruption on Mt Paektu a million years ago.

The waterfall is in nine principal parts with myriads of splashes in between, making it look like a compound of cascades.

Jagged rocks protruding from the splashes, crystal-clear water at the base of the waterfall and primordial forests afford wonderful views.

Seasonal variation of its scenes is great, azaleas coming into full bloom in spring, luxuriant verdure in summer and leaves turning red in autumn.

A rainbow arcs gracefully over the waterfall on clear days. In the dead of winter it is half frozen and half tumbling, a veil of gauzy mist caused by underground water hovering nearby and frostwork presenting a scene of superb beauty.

### **73. Pibong Falls**

The Pibong Falls is located in Okryu Valley in the Kuryong Pool area, Outer Kumgang, Mt Kumgang.

The waterfall is 139m high and 4m wide, and the length of its curving crest line is 166m.

Along with the Kuryong, Sibi and Ogyong falls, it is one of the four spectacular waterfalls in the mountain.

The Pibong Falls was named so, because it resembles a phoenix unfurling its wings and jerking its tail to fly. It crashes and tumbles, sending up wisps of mist blended with tints of silver, gold and purple.

Next to it is the 20m-long Mubong Falls with an easy gradient.

### **74. Ryongyon Falls**

The Ryongyon Falls gushes thrillingly over the edge

of a slope to the south of Pobwang Peak in Mt Myohyang, one of the celebrated mountains in Korea.

Noted for its majestic beauty and easy gradient, the waterfall is 84m high and its curving crest line is 105m long. The face is composed of granite.

Just over it is a pond, 3m in diameter and 1.5m in depth. Streams flow down a valley below Pobwang Peak and then into this pond.

The Sanju Falls, which resembles a cascade of beads, is about 50m away to the left of the Ryongyon Falls. Above it, there is the Chonsin Falls, which looks like a stream flowing from heaven.

## **75. Ullim Falls**

Located in Kangwon Province in the eastern part of Korea, the Ullim Falls is one of the famous waterfalls in the country.

Surrounded by a series of precipitous peaks and cliffs, it is 63m high and its curving crest line is 75m long.

It was named so, because the crashing sound reverberates loudly through the hills.

Streams from the Masikryong Mountains converge at a point midway down the cliff and then tumble at an average rate of 20-25 cubic metres per second.

At the base of the waterfall is a pool, 1.5m deep and 30m in radius.



## **76. Tideland**

Korea has 540 338 hectares of tideland, 289 479 hectares in its northern half and 250 859 hectares in its southern half.

There are 80 hectares in the East Sea of Korea, 496 487 hectares in the West Sea of Korea and 43 771 hectares in the South Sea of Korea.

In the northern half of Korea tideland reclamation projects are carried on every year, with the result that a large area of tidal flats has been turned into fertile fields.

## **77. Seas**

Korea is a maritime country girded on three sides by the East, West and South seas of Korea.

The coastline of the mainland is 6 877.5km long. When the perimeters of the islands are added to it, the total length is 16 053.3km.

The coast coefficient of the Korean seas (coast coefficient equals the area of the territory divided by the length of the coastline) is 13.5, which is among the highest in the world, except for some island countries.

The land of Korea accounts for 0.15% of that of the globe, but the combined area of its seas constitutes 0.58% of that of the seas in the world.

The total area of the seas around the land of Korea is over 9.5 times larger than that of the land itself.

## **78. East Sea of Korea**

The East Sea of Korea is situated between lat. 52° 14' N. and lat. 34° 26' N.

It is of an oval shape with a 2 200km-long axis extending from northeast to southwest.

The latitude difference between its northern and southern tips is 17° 48' and it is 1 978km long on the meridian line and 1 044km wide at lat. 40° N.

The sea has an area of 970 500 sq km and is 1 668m deep on average, 3 699m at its deepest.

It is 7 600km in circumference, bordering the land on a 7 307km line and other seas on a 293km line. Its coastline is 1 986.9km long and its indentations are not very deep.

It has dozens of bays including East Korea Bay, Josan Bay, Rajin Bay, Kyongsong Bay, Hongwon Bay, Hamhung Bay, Wonsan Bay and Yongil Bay. Found in the sea are many islands including Ullung Island, Tok Islet and Mayang Island.

## **79. West Sea of Korea**

The West Sea of Korea is a gulf extending deep into the land between the shores of Korea and China. It

extends through the South Sea of Korea into the Pacific Ocean.

It has some characteristics.

First, it is the smallest and shallowest of the three seas in Korea.

It covers an area of 436 100 sq km, averaging 39m in depth, the deepest point reaching 118m. It is only 10m deep at a point 10km away from the shores of West Korea Bay.

Second, it has a long and crooked coastline.

It was originally a vast expanse of land. While it was being submerged beneath ocean water, mountain ranges and peaks were turned into peninsulas and islands, and valleys and lowlands into bays and sea. For this reason there are many bays, peninsulas and islands on the sea and it has a convoluted coastline.

Third, the tidal range is very long.

It is 3-6m on average, 11.02m at the maximum.

Among the seas in Korea, it is the lowest in salinity. Its salinity averages 32Ps.

## **80. South Sea of Korea**

The South Sea of Korea is a relatively shallow coastal sea in the northwest of the Pacific Ocean adjoining the East and West seas of Korea, the Philippine Sea and the South China Sea.

It is 822 700 sq km in area and 381m deep on average, its deepest point reaching 2 999m.

The waters of the Continental Shelf constitute 72% of the sea, so the volume of seawater is relatively small as compared with its area.

It has such peninsulas as Haenam, Janghung, Kohung, Thongyong and Ryosu, dozens of bays including Jinhae, Sunchon and Posong, and over a thousand islands including Jeju, Koje and Namhae.

It has 12 big bays and 17 small ones, scores of lagoons, and nearly 50 long and narrow waterways.

## **81. Islets and Islands**

The islets and islands on the three seas of Korea total 3 452; 216 on the East Sea of Korea, 1 980 on the West Sea of Korea and 1 256 on the South Sea of Korea.

Most of them are continental islands, except some volcanic islands including Jeju Island, Ullung Island and Tok Islet.

## **82. Jeju Island**

Located in the South Sea of Korea, Jeju Island is of volcanic origin.

The largest in Korea, it is 1 841.22 sq km in area and 302.81km in circumference. It is an elliptical island

extending 64km east and west and 32km south and north.

It is in a conical shape and its coastline is rather dull. The highest point is Mt Halla (1 950m).

It has U Island on the east; Pom, Mun, Sup and Jigwi islets on the south; Hyongje, Kapha and Mara islets on the southwest; and Juk, Piyang and other islets on the west.

Chuja Islands are sandwiched between Jeju Island and South Jolla Province, which is north of the island.

The hottest part in Korea, it affords habitats for subtropical evergreen forests.

### **83. Ullung Island**

Ullung Island is a volcanic island northeast of North Kyongsang Province.

The largest island in the East Sea of Korea, it is 72.834 sq km in area and 49.15km in circumference.

It is a cone-shaped island with Songin Peak (984m) at its centre and is largely mountainous.

The weather is warm and there is heavy precipitation. More than 40% of precipitation comes between February and December.

As it is far away from the land, the distribution of fauna and flora has some characteristics.

There are beech, paulownia and other species of

trees, and wildcats, mice and reptiles that are not indigenous to the island.

In the waters off the island are squid, mackerel, herring and other fish species.

#### **84. Tok Islet**

Tok Islet lies 90km southeast of Ullung Island.

It comprises Tong, So and dozens of other rocky islets and sunken rocks.

So Islet is 0.102 sq km in area, 1.75km in circumference and 171m above sea level; Tong Islet, 0.069 sq km, 1.39km, 93m, respectively.

Tong Islet, which is of volcanic origin, has traces of a crater at the top. The weather is warm and windy, and there is much precipitation. Birds abound there, and in the waters off the islet are cuttlefish, squid, mackerel, anchovy, whale, dolphin, abalone, seaweed, etc.

Tok Islet was named so, because it stands in seclusion in the East Sea of Korea. It is also said that the islet was called *tok*, as *tok* is *tol*, meaning rock in the dialect of North Kyongsang Province.

Since olden times the islet has been recognized worldwide as part of the inviolable territory of Korea.

#### **85. Marine Resources**

Korea has rich and varied marine resources.

Fauna and flora abound in its seas.

There are 1 160 species of fish: 450 in the East Sea of Korea, 250 in the West Sea of Korea and 460 in the South Sea of Korea.

Aside from the fish species, whale, dolphin, seal and other marine animals, many mollusc species, and 495 species of marine plants can be found in the seas.

The East Sea of Korea is rich in migratory fish species. In spring shoals of mackerel and anchovy swim upwards and herrings come down from the north.

Gizzard shad, Spanish mackerel and other species winter in the South Sea of Korea and, as spring comes round, migrate to the surfaces of the East and West seas of Korea.

There are also non-migratory fish species, including Alaska pollack and sailfin sandfish, which pass summer in the depth of the East Sea of Korea and reach the shores in winter to spawn, and lockington, which winters in the deep waters and comes to the shores in spring. Those that spawn or feed themselves, shuttling back and forth between the deep waters and the shores in different seasons, include ray, skate, sea bass, dace, flatfish, halibut, rock fish, sea bream, launce, horse mackerel and cuttlefish. In addition, there are trepang, oyster, abalone, scallop, clam, mussel, short neck clam, ark shell, trough shell and kelp.

The seas have an abundance of energy resources.

The West Sea of Korea is known worldwide for its long tidal range, convoluted coast and numerous islets, so it has conditions favourable for tidal power generation.

There are ample mineral resources along the shores and in the deep seas of Korea.

## **86. Mineral Resources**

Korea may be called a “mineral sample room of the world.”

It boasts over 400 kinds of minerals, more than 200 of which are useful ones.

It is known worldwide for the amount and quality of its mineral deposits—iron, manganese and other ferrous metals; copper, lead, zinc, gold, silver and other non-ferrous metals; molybdenum, tungsten and other alloying element minerals; graphite, magnesite, barite, fluorite, agalmatolite, etc.

## **87. Metallic Minerals**

Korea is rich in metallic minerals that can be used as raw materials for metal industry.

Typical of them are magnetite, hematite, limonite, copper pyrites, lead glance, copper glance, galena, cerussite, pyromorphite, anglesite, wolframite, scheelite,



molybdenite, wulfenite, alunite, boehmite, diaspore, uraninite and pitchblende.

These minerals, most of which are polymetallic, are used to meet the massive demands of the national economy, and produce rare and precious metals to feed modern industry.

## **88. Nonferrous Minerals**

Korea has rich mineral deposits for such nonferrous metals as copper, lead, zinc, nickel, tungsten, molybdenum, tin, lithium and gold.

The minerals for copper production are mostly copper pyrites and copper glance, which occur in Ryanggang, Jagang, North Kyongsang and South Kyongsang provinces.

Lead-zinc minerals are divided mainly into two categories, galena and zinblend. Their deposits are mostly found in South Hamgyong, South Phyongan, South Hwanghae, North Hwanghae and North Kyongsang provinces.

Nickel minerals occur in the form of copper pyrite-pentlandite, which are usually accompanied with such metals as platinum, palladium and cobalt. They occur in North Hamgyong Province.

Tungsten minerals include wolframite and scheelite, which occur in South Phyongan, North Hwanghae and

other provinces. Molybdenum is obtained from molybdenite.

Gold is extracted from placer, free gold in alloy veins and gold dust dispersed in iron pyrites, galena, zincblende, pyrrhotine, arsenopyrite, copper pyrites and other sulphide ores. They occur mainly in Pyongyang, South Hwanghae and South Hamgyong provinces.

Korea also has huge deposits of aluminium, including potassium feldspar, bauxite, nepheline and alunite.

## **89. Ferrous Minerals**

Typical of the ferrous metals in Korea are iron, manganese and chromium.

Iron ores, including magnetite, limonite and siderite, buried underground, are estimated to be billions of tons.

The majority of them are in the northern half of Korea.

High-grade magnetite is found in the Musan area and limonite along the west coast.

Korea is also abundant in manganese and chromium ores.

The Musan Mining Complex, one of the biggest in the world, turns out nearly 70% of the country's iron ores.

## **90. Nonmetallic Minerals**

Korea's nonmetallic minerals include magnesite, graphite, mica, fluorite, talc, barite, asbestos, silica sand, quartz and zeolite.

Its magnesite deposits are known worldwide for their high grade and abundance. They are buried mainly in Ryongyang and Taehung (South Hamgyong Province) and Paegam (Ryanggang Province). Graphite deposits are divided mainly into amorphous graphite and flaky graphite, which occur mostly in Janggang, Jagang Province; Kim Chaek, North Hamgyong Province; and Kaechon, South Phyongan Province.

Korea also has limestone, iron sulphide, apatite, potassium feldspar, holtonite and other minerals for use in chemical industry and agriculture.

Limestone is widely distributed across the country, especially in Pyongyang, and South Phyongan, North Hwanghae, South Hwanghae, South Hamgyong and Kangwon provinces.

Apatite is mostly found in Phyongwon, Jungsan and Songchon in South Phyongan Province; Songhwa in South Hwanghae Province; Tanchon in South Hamgyong Province; and Kim Chaek in North Hamgyong Province. Potassium feldspar occurs mainly in Chongdan, South Hwanghae Province. Used as a raw material for boron production for several sectors of industry and agriculture,

holtomite was named so, because it is indigenous to the Holtong area.

The country abounds in phlogopite, biotite, muscovite, lepidolite and other mica deposits, which are found mostly in Kilju, North Hamgyong Province; Tanchon, South Hamgyong Province; Pakchon, North Phyongan Province; Suan and Holtong, North Hwanghae Province; and Jechon and Tanyang, North Chungchong Province.

The country is rich in high-grade kaolin, which is found mainly in Kyongsong, North Hamgyong Province, and Anbyon, Kangwon Province.

It has an abundance of stone resources.

Granite is widely distributed, especially in Ryonggang, South Phyongan Province, and Haeju, South Hwanghae Province. Marble comes in beautiful colours and patterns, found mostly in Kim Chaek, North Hamgyong Province, and Phyongsan, North Hwanghae Province.

The country also boasts rich deposits of serpentine, particularly in Tanchon, South Hamgyong Province; Paegam, Ryanggang Province; and Chongjin, North Hamgyong Province.

Kumipho and Monggumpho in South Hwanghae Province are rich in silica sand that is massively used as raw materials for glass industry and in the steel-casting

and iron-melting processes of machine-building industry.

## **91. Coal Reserves**

Korea has rich coal reserves, which are estimated to be tens of billions of tons.

Typical of them are lignite, anthracite, ultraanthracite and peat.

Anthracite is found in the central part of the northern half of Korea, including South Phyongan Province, Kowon in South Hamgyong Province and Munchon in Kangwon Province, and also in Samchok, Mungyong and Hwasun in the southern half.

Lignite occurs mostly in the northwest of South Phyongan Province and in North Hamgyong Province, the coalfield in the Anju area being the largest. It is also found in the coastal areas near the lower reaches of the Tuman River, including Hoeryong, Onsong, Kyongwon and Kyonghung, and in the southern part of North Hamgyong Province, including Kilju, Myonggan and Kim Chaek.

Kangwon and North Hwanghae provinces are particularly rich in ultraanthracite.

## **92. Underground Water Reserves**

There are huge reserves of underground water in

Korea, especially in the Tokchon-Pukchang and Hoechang-Yangdok areas in South Phyongan Province, the Yonsan-Suan area in North Hwanghae Province, and the Jangjin-Pujon-Sinhung area in South Hamgyong Province. Of them, Sinhung County has the biggest underground water reserves per unit area.

Water in Korea is noted for its excellent quality and health-promoting properties.

Sindoksan mineral water that gushes out at the foot of Mt Sindok in Onchon in the city of Nampho, is well known for its effectiveness in promoting human health.

Korea is also abundant in hot springs, spas and other water reserves of great medicinal value.

It has over 100 sources of mineral water, which are found mostly in Jagang, North Phyongan and Kangwon provinces.

In Korea there are mostly carbonated, vitoriol and complex saltwater springs. The mineral water of the Sogwangsa, Okhodong and other springs contains a fair amount of radon.

### **93. Mineral Springs**

Mineral springs are numerous in Korea, particularly in Jagang, Kangwon and North Phyongan provinces and Nampho.

They are mostly springs of calcium-sodium bicarbonate (Kangso and Kwangmyong) and ammonium-iron sulphate (Mt Kobang and Songhak), all of which contain plenty of free carbonic-acid gas.

Typical of them are Kangso, Sogwangsa, Sambang, Okhodong, Sangnong, Oegwi, Taedong, Chingyo, Myohyangsan, Chojong and Ryongdam mineral springs.

#### **94. Hot Springs**

In Korea there are Paektu, Kyongsong, Onpho, Yangdok, Sokthang, Kumgangsán, Sinchon, Ongjin, Jongdal, Songhwa, Paechon, Naegok, Suanbo, Tongnae and other hot springs.

Most of them are hot springs of sodium bicarbonate and chloro-sodium, and some are of sulphate-sodium bicarbonate and chloro-sodium sulphate. Some others contain a fair amount of radon and hydrogen sulphate.

#### **95. Geothermal Energy Resources**

Korea is abundant in medium- and low-temperature geothermal energy resources.

They occur mainly in Ongjin and Paechon.

The surface water of the mineral spring averages about 100°C in the Ongjin area and over 70°C in the Paechon area.

## **96. Water Resources**

Korea is rich in water resources because it has many mountains, rivers and streams, and it receives heavy precipitation.

The rivers and streams that are more than 5km long number 6 594 and the total amount of their flow averages 132.1 billion cubic metres yearly.

If the lakes, reservoirs and springs are added up, the sum total of Korea's water is colossal as compared with the area of its land.

The country's annual precipitation averages 966.3mm, way above the world average (840mm).

As it is of high quality, the country's water can be used as it is for irrigation, fish farming and industrial purposes.

## **97. Animals**

Korea abounds in animal resources, a country that boasts a favourable climate and is sea girt on three sides and in which mountains occupy 80% of the land and there are many rivers and streams.

It has nearly 10 000 species of animals in all, 1 500 species of vertebrates and 8 500 species of invertebrates.

Many of the invertebrates are useful, including squid, shellfish, crab, shrimp, trepang and sea urchin.

As compared with its land area, Korea's animals



show great regional variations: 26 families, 17 genera and 100-odd species (including subspecies) of mammals; 60 families, 192 genera and 450-odd species (including subspecies) of birds; 27 species of reptiles; 15 species of amphibians; and 930-odd species of fish (including 185 species of freshwater fish).

100-odd species of mammals and 450-odd species of birds thrive in the thickly-wooded forests. They include Korean tiger, which is called the king of the animal world, sable, deer, water-deer and other useful mammals, and rare species of birds such as broad-billed roller.

Rivers and lakes are teeming with rainbow trout, char, carp, sweetfish, salmon, trout, etc.

## **98. Indigenous Animals**

More than 30 species of animals are indigenous to Korea, including tiger and water-deer (mammals); white-bellied black woodpecker (bird); *Eumeces coreensis* (reptile); *Rana chosonica* and *Rana coreana* (amphibians); and *Hucho ishikawai*, *Thymallus jaluensis*, *Archeilognathus yamatsutae* Mori, *Sarcocheilichthys czerskii*, *Pseudopungtungia nigra* Mori, *Phoxinus kumgangensis*, *Gonoproktopterus mylodon*, *Coreoleuciscus splendidus* and *Gnathopogon coreanus* (fish).

Korean tiger that hails from Wagal Peak is a natural

monument of Korea. It is big and agile, and its fur has beautiful patterns. On average, it weighs 140kg and is 2.5m long with the length of its tail included.

## **99. Plants**

Korea boasts rich and varied plant resources.

Its plant species total more than 4 300, 3 200 of which are the species of seed plants.

The number of plant species and their density are nearly three times higher than those of France, Britain and other countries that, like Korea, have a temperate climate. They are still higher than those of Kalimantan in the tropical region.

Korea's plant resources are varied, which include 100 species for timber, 900 species for medicine, 300 species of herbs, 30 species of wild fruits, 160 species for animal fodder, 60 species for essential oil, 50 species for oil, 100 species for fibre, 170 species for honey and 300 species for gardening.

## **100. Indigenous Plants**

Korea's indigenous plants top 300 species and, their varieties included, total 800-odd species.

Typical of them are *Abeliophyllum distichum*, *Pentactina rupicola*, *Keumkangsania asiatica*, Korean rhubarb, *Forsythia densiflora*, *Rheum coreanum*,

*Echinosophora koreensis*, *Abies koreana*, *Fagus multinervis*, *Benzoin angustifolium* var. *glabrum*, *Sasa coreana*, *Prunus yedoensis* and *Acanthopanax koreanum* Nakai.

*Keumkangsania asiatica* or *kumgang chorong* in Korean is indigenous to Mt Kumgang. It is a rare plant that cannot be found elsewhere in the country. It was named so, because its flower resembles a pail. Pail is *chorong* in Korean.

Korean insam is world-famous.

**UNDERSTANDING KOREA (1)**  
**(NATURE)**

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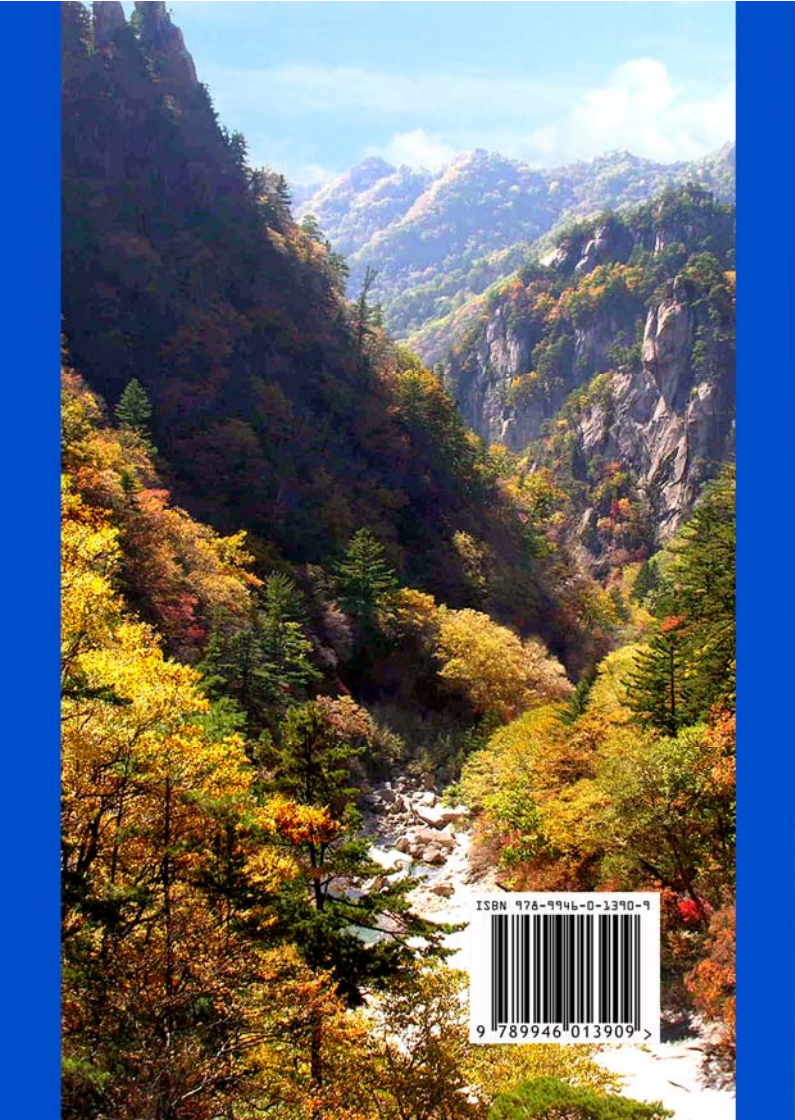
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A scenic view of a mountain valley. A river flows through the center of the valley, surrounded by dense forests of trees with vibrant autumn foliage in shades of yellow, orange, and red. The mountains in the background are covered in green and brown vegetation, with some rocky peaks visible. The sky is blue with light clouds. The entire image is framed by a solid blue border.

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