参考译文：

地热能

Earth’s internal heat, fueled by radioactivity, provides the energy for plate tectonics and continental drift, mountain building, and earthquakes. It can also be becomes available in a practical form when underground heat is transferred by water that is heated as it passes through a subsurface region of hot rocks (a heat reservoir) that may be hundreds or thousands of feet deep. The water is usually naturally occurring groundwater that seeps down along fractures in the rock; less typically, the water is artificially introduced by being pumped down from the surface. The water is brought to the surface, as a liquid or steam, through holes drilled for the purpose.

地球内部因放射产生的热量为板块运动、大陆漂移、造山运动和地震提供了能量。这种热量还可以用来驱动发电机发电以及为家庭供暖。水流经地表下可能深达几百甚至几千英尺处的热岩区域（一种热储）被加热，通过水的传输地下的热量就变成了可以加以利用的地热能形式。这些水通常是沿着岩石的断面下渗的天然地下水，少数情况下是人为从地表泵入的水。通过为了采集地热能所钻的孔，这些水会以液体或蒸汽的形式被带到地表。

By far the most abundant form of geothermal energy occurs at the relatively low temperatures of 80°to 180°centigrade. Water circulated through heat reservoirs in this temperature range is able to extract enough heat to warm residential, commercial, and industrial spaces. More than 20,000 apartments in France are now heated by warm underground water drawn from a heat reservoir in a geologic structure near Paris called the Paris Basin. Iceland sits on a volcanic structure known as the Mid-Atlantic Ridge. Reykjavik, the capital of Iceland, is entirely heated by geothermal energy derived from volcanic heat.

到目前为止，最丰富的地热能形式介于相对较低的 80 到 180 摄氏度的温度。在此温度范围内的热储内循环的水可以提取出足够的热量加热民用、商用和工业用空间。目前在法国有 20000 间以上的公寓是由从巴黎附近叫做巴黎盆地的地质构造的热储中汲取的温暖的地下水供暖的。冰岛位于一个被称为是大西洋中脊的火山构造之上。冰岛的首都雷克雅维克完全是用火山热产生的地热能供暖的。

Geothermal reservoirs with temperatures above 180°centigrade are useful for generating electricity. They occur primarily in regions of recent volcanic activity as hot, dry rock; natural hot water; or natural steam. The latter two sources are limited to those few areas where surface water seeps down through underground faults or fractures to reach deep rocks heated by the recent activity of molten rock material. The world’s largest supply of natural steam occurs at the Geysers, 120 kilometers north of san Francisco, California. In the 1990s enough electricity to meet about half the needs of San Francisco was being generated there. This facility was then in its third decade of production and was beginning to show signs of decline, perhaps because of over development. By the late 1990s some 70 geothermal electric-generating plants were in operation in California, Utah, Nevada, and Hawaii, generating enough power to supply about a million people. Eighteen countries now generate electricity using geothermal heat.

温度高于 180 摄氏度的地热储集层可以用于发电。这类地热储集层主要位于有近期火山活动的区域，出现的形式有干热的岩石、天然热水或天然蒸汽。后两种形式的储集层局限于少数区域，在这些区域，地表水通过地下断层或断裂渗入到被近期的熔岩活动加热的深层岩石。世界上最大的天然蒸汽供应位于加州旧金山以北 120 公里处的盖沙斯。二十世纪九十年代那里产出的电能大约能满足旧金山半数的需求。当时已经是该发电厂运行的第三个十年，并且开始显示出发电量下降的迹象，这可能是由于过度的开发。到二十世纪九十年代末，加州、犹他州、内华达州和夏威夷约有 70 个地热发电厂在运转，产生的电能足以供应一百万人口所需。目前有 18 个国家利用地热能发电。

Extracting heat from very hot, dry rocks present a more difficult problem: the rocks must be fractured to permit the circulation of water, and the water must be provided artificially. The rocks are fractured by water pumped down at very high pressures. Experiments are under way to develop technologies for exploiting this resource.

要从极干热的岩石中提取热量存在一个更大的难题：必须破碎岩石使得水可以在其中循环，而且水必须是人工提供的。通过泵人高压水可以将岩石破碎。开发利用此能源的技术的实验正在进行之中。

Like most other energy sources, geothermal energy presents some environmental problems. The surface of the ground can sink if hot groundwater is withdrawn without being replaced. In addition, water heated geothermally can contain salts and toxic materials dissolved from the hot rock. These waters present a disposal problem if they are not returned to the ground from which they were removed.

就像大多数其它能源一样，地热能也具有一些环境问题。如果抽取地下热水而又不泵回，地表就会下沉。此外，地热加热的水含有从热岩中溶出的盐分和有毒物质。这些水如果不能被输送回抽取的地方，将会产生处理方面的问题。

The contribution of geothermal energy to the world’s energy future is difficult to estimate. Geothermal energy is in a sense not renewable, because in most cases the heat would be drawn out of a reservoir much more rapidly than it would be replaced by the very slow geological processes by which heat flows through solid rock into a heat reservoir. However, in many places (for example, California, Hawaii, the Philippines, Japan ,Mexico, the rift valleys of Africa) the resource is potentially so large that its future will depend on the economics of production. At present, we can make efficient use of only naturally occurring hot water or steam deposits . Although the potential is enormous, it is likely that in the near future geothermal energy can make important local contributions only where the resource is close to the user and the economics are favorable, as they are in California, New Zealand, and Iceland. Geothermal energy probably will not make large-scale contributions to the world energy budget until well into the twenty-first century, if ever.

地热能对世界能源未来的贡献是难以估量的。地热能在某种意义上讲是不可再生的，因为多数情况下从热储提取热量的速度要比热流极为缓慢地从坚硬的岩石传到热储的地质作用的更新速度快得多。不过，在很多地区（例如加州、夏威夷、菲律宾、日本、墨西哥、非洲的裂谷），这种能源可能非常可观，它们的前景将取决于生产的经济性。目前，我们只能有效的利用天然形成的热水或蒸汽形式的地热能。尽管潜能巨大，近期之内地热能可能只能对毗邻用户以及经济状况良好的地区做出重要的局部贡献，就像在加州、新西兰和冰岛地区的情况一样。即便到 21 世纪后期，地热能也不太可能会对世界的能量预算做出大尺度的贡献。