



◎ 刘双芹 胡震云 王薇薇 李红仙 编译
◎ 丰景春 主审

水利水电 工程英语



中国水利水电出版社
www.waterpub.com.cn

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内 容 提 要

本书是一本实用性、专业性都很强的水利水电工程英语读物。全书共分 32 章, 每章包括两篇课文(精读、泛读各一篇)。文章由课文, 生词(音标、词性、中文意思), 词组(中文意思), 专有名词(中文意思), 注释(对文中复杂的句子、结构等进行解释并译成中文), 思考题和参考译文组成。本书将基础英语、专业英语和专业知识结合起来, 并介绍了一些案例。另外, 本书后面还附有水利水电工程英语常用词汇。

全书阅读材料大都选自英美原著, 取材广泛, 文章相对独立而又相互关联, 尽量将地道、准确的英语语言奉献给读者。另外, 本书还探讨了水利水电工程英语读、写、译的基本知识和技巧及对策, 介绍了如何写英文摘要及科技论文等。

本书可供水利水电行业的科技人员、商务人员、管理人员查阅、使用, 也可作为大专院校水利水电工程相关专业学生的专业英语教材。

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前 言

随着经济全球化和中国加入 WTO, 国内外的经济技术交流活动与日俱增。我国水利水电行业的科技人员、管理工作已具有一定的基础英语知识, 他们急需结合自身的工作实际尽快提高专业英语水平, 不仅掌握常用的词汇和英语句型, 而且在学习英语的同时又加深对专业的理解。为了更好地吸收国外的有益经验, 了解本专业的最新发展动态, 他们对水利水电工程英语方面的书籍的需求越来越迫切。本书正是基于这些目标而编写的。此外, 本书还研究探讨了一些阅读和翻译方面的基本知识和技巧, 介绍如何写英文摘要及科技论文等, 旨在帮助科技管理人员少走弯路, 尽快提高英语读写译的能力, 避免在工作中出现重大失误。

本书有以下几个特点:

★内容全面。几乎涉及到所有种类的水利水电工程。

★结构清晰。以水为主线, 贯穿全书。从世界水资源入手, 逐步展开, 包括水污染、洪水控制、水文学、灌溉、水泵与抽水、航道、船闸、运河、溢洪道、水坝、水库、隧道、桥梁、水力发电、水能、抽水蓄能、潮汐能、发电机、变压器、水轮机、汽轮机、配电系统、土木工程、环境工程、起重机等。

★实用性强。从实用角度出发, 以提高专业英语水平和读写译等应用能力为宗旨, 根据目前英语读写译方面存在的问题, 编译了专业英语读写译的技巧及对策。

★专业词汇丰富。与水利水电有关的词汇应有尽有, 不仅提供了中文意思, 而且还标上了音标, 更加便于学习和记忆。

全书阅读材料大都选自英美原著, 取材广泛, 文章相对独立而又相互关联, 尽量将地道、准确的英语语言奉献给读者。每章包括两篇课文(一篇精读, 一篇泛读)。文章由课文, 生词(音标、词性、中文意思), 词组(中文意思), 专有名词(中文意思), 注释(对文中复杂的句子、结构等进行解释并译成中文), 思考题和参考译文组成。本书将基础英语、专业英语和专业知识结合起来, 根据具体内容适当地介绍一些案例, 让读者对每章内容都能进

行全面深入的学习，方便读者阅读和记忆。

本书由刘双芹、胡震云、王薇薇、李红仙编译。全书由刘双芹统稿，丰景春教授主审。

本书可供水利水电行业的科技人员、商务人员、管理人员学习、查阅使用，也可作为大专院校水利水电工程相关专业学生的专业英语教材。

本书编译过程中疏漏、不妥之处在所难免，敬请同行专家和广大读者不吝赐教指正。

编译者

2006年10月于南京河海大学

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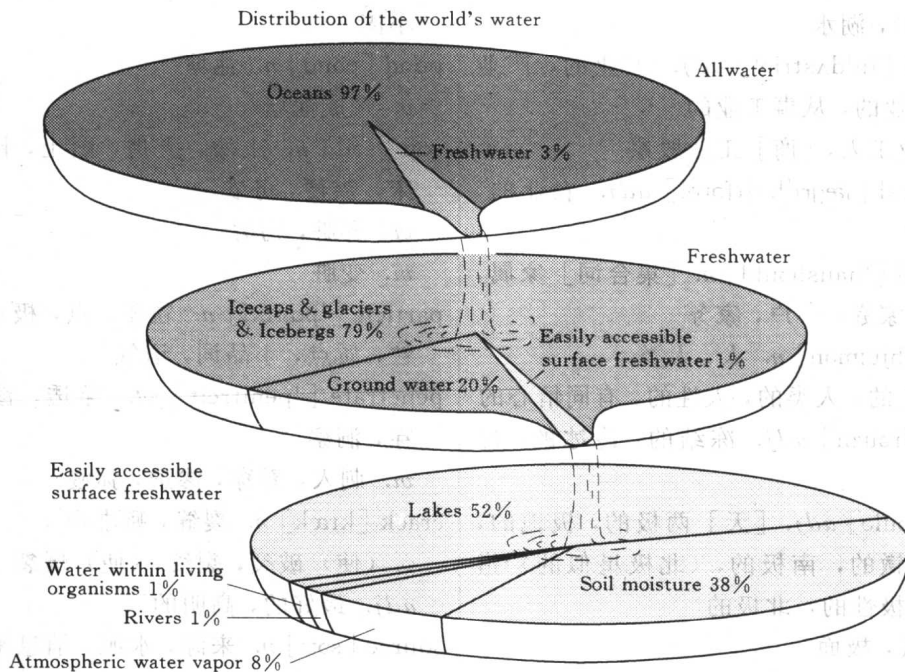
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Unit 1

Section 1 Brief Introduction to the World Water

Water is one of the Earth's natural resources. It is a finite resource, which means that the total amount of water is limited. Most of the world's water supply is saltwater stored in the oceans. Converting saltwater to freshwater is generally too expensive to be used for industrial, agricultural or household purposes.¹

The type of water we generally use in human activities is freshwater. Only 3% of the world's water supply is freshwater and two-thirds of that is frozen, forming the polar icecaps, glaciers, and icebergs.² The remaining 1% of the total world water supply is freshwater available as either surface water or ground water; ground water accounts for two-thirds of this amount. Surface water is water that is visible above the ground surface, such as creeks, rivers, ponds and lakes. Ground water is water that either fills the spaces between soil particles or penetrates the cracks and spaces within rocks.



Most people get their water from ground water sources. Roughly 9 out of every 10 public water systems (PWSs) operate wells to tap ground water and just over half of the total population served by PWSs drinks water from a ground water source. Millions more get their water from private wells which also tap ground water sources. Ground water systems tend to serve smaller numbers of people, while surface water systems generally serve large populations. The quantity and quality of the world's water supply depends on how we choose to use water. Our use can be consumptive, which means that the water is not returned to nature (such as drinking water), or nonconsumptive. Nonconsumptive use returns water, polluted or not, to the system. Creating hydroelectric power is an example of nonconsumptive use.

New Words

resource [ri'sɔ:s] *n.* 资源, 财力, 办法, 智谋

finite ['fainait] *adj.* 有限的, [数] 有穷的, 限定的

saltwater ['sɔ:lt,wɔ:tə(r), -wɔ-] *adj.* 盐水的, 海产的

convert [kən'veɪt] *vt.* 使转变, 转换……, 使……改变信仰

freshwater ['frefwɔ:tə(r)] *n.* 淡水 (不是海洋水的), 湖水

industrial [in'dʌstriəl] *adj.* 工业的, 产业的, 实业的, 从事工业的
n. 工业工人, [商] 工业股票

agricultural [ægrɪ'kʌltʃərəl] *adj.* 农业的, 农艺的

household ['haushəʊld] *n.* [集合词] 家属, 家眷; 家庭, 一户, 家务

human ['hju:mən] *n.* 人, 人类

adj. 人的, 人类的, 人性的, 有同情心的
frozen ['frəʊzn] *adj.* 冻结的, 冷冰的, 冷酷的

polar ['pəʊlə] *adj.* [天] 两极的, 极地的, 南辕北辙的, 南极的, (北极星似的) 指引的, 极性的, 北极的
n. 极线, 极面

glacier ['glæsjə, 'gleɪfə] *n.* 冰河

iceberg ['aɪsbəɡ] *n.* 冰山, 冷冰冰的人

remain [ri'mein] *vi.* 保持, 逗留, 剩余, 残存

available [ə'veɪləbl] *adj.* 可用到的, 可利用的, 有用的, 有空闲的, 接受探访的

visible ['vɪzəbl] *adj.* 看得见的, 明显的, 显著的

n. 可见物

creek [kri:k] *n.* 小溪, 小河, (主英) 小港, 小湾

pond [pɒnd] *n.* 池塘

v. 筑成池塘

soil [soɪl] *n.* 土壤, 土地, 国土, 国家, 温床, 粪便, 务农

vt. 弄脏, 污辱

vi. 变脏

particle ['pɑ:tɪkl] *n.* 粒子, 点, 极小量, 微粒, 质点, 小品词, 语气

penetrate ['penɪtreɪt] *vt.* 穿透, 渗透, 看穿, 洞察

vi. 刺入, 看穿, 渗透, 弥漫

crack [kræk] *n.* 裂缝, 噼啪声

v. (使) 破裂, 裂纹, (使) 爆裂

adj. 最好的, 高明的

source [sɔ:s] *n.* 来源, 水源, 消息来源, 原始资料, 发起者, 源, 源极

system ['sistəm] <i>n.</i> 系统, 体系, 制度, 体制, 秩序, 规律, 方法	quantity ['kwɒntəti] <i>n.</i> 量, 数量
tap [tæp] <i>n.</i> 轻打, 活栓, 水龙头 <i>vt.</i> 轻打, 轻敲, 敲打出, 开发, 分接, 使流出, 选择, 攻螺纹于 <i>vi.</i> 轻叩, 轻拍, 轻声走	quality ['kwɒləti] <i>n.</i> 质量, 品质, 性质
public ['pʌblɪk] <i>n.</i> 公众, (特定的) 人群, 公共场所 <i>adj.</i> 公众的, 公共的, 公立的, 公用的	consumptive [kən'sʌmptɪv] <i>adj.</i> 消费的, 消耗性的, 浪费的 <i>n.</i> 肺病患者
private ['praɪvət] <i>adj.</i> 私人的, 私有的, 私营的, 秘密的 <i>n.</i> 士兵	create [kri'eɪt] <i>v.</i> 设立, 创立, 创设, 创造, 创制, 创作, 设定, 造成, 制造
serve [sɜ:v] <i>v.</i> 当仆人, 服务, 服役, 供职, 招待, 侍候, 供应, 适合 <i>n.</i> 发球	hydroelectric [ˈhaɪdrəɪˈlektɪk] <i>adj.</i> 水电的; 水力发电的
population [ˌpɒpjʊˈleɪʃən] <i>n.</i> 人口	power ['paʊə] <i>n.</i> 能力, 力量, 动力, 权力, [数] 幂, [物] 功率 <i>vt.</i> 使……有力量, 供以动力, 激励
	roughly ['rʌfli] <i>adv.</i> 概略地, 粗糙地; 一般说来, 粗地, 约略地
	pollute [pə'lʊt, -'ljʊ:t] <i>vt.</i> 污染, 玷污, 败坏……

Phrases and Expressions

natural resources 自然资源	ground water 地下水
water supply 水源	account for 占……; 解释
for industrial, agricultural or household purposes 为了工业、农业或家庭	public water systems (PWSs) 公共用水系统
human activities 人类活动	drinking water 饮用水
surface water 地表水	

Notes

1. Converting saltwater to freshwater is generally too expensive to be used for industrial, agricultural or household purposes.

为了工业、农业或家庭用水, 将咸水转变成淡水通常代价昂贵、无法实行。

2. Only 3% of the world's water supply is freshwater and two-thirds of that is frozen, forming the polar ice caps, glaciers, and icebergs.

世界上只有3%的水资源为淡水, 其中2/3为极地冻结的冰冠、冰川和冰山。

句中 that 指代 the world's water supply。

Questions

1. Why is water a finite resource?
2. How much of the world's water supply is freshwater?
3. What does the quantity and quality of the world's water supply depend on?

世界水简介

水是地球上一种自然资源。水是有限资源，也就是说，水的总量是有限的。世界上大部分的水源是储存在海洋中的咸水。为了工业、农业或家庭用水，将咸水转变成淡水通常代价昂贵、无法实行。

人类活动所使用的水为淡水。世界上只有 3% 的水源为淡水，其中 2/3 为极地冻结的冰冠、冰川和冰山。世界水源总量中剩下的 1% 为地面或地下淡水。地下水占其中的 2/3。地面水即为地面上能看得见的诸如溪流、河流、池塘和湖泊中的水。地下水是指聚积在土壤或岩层空隙中的水。

大多数人从地下水源取水。约有 9/10 的公共用水系统打井开采地下水。靠公共用水系统供水的人口中只有一半以上的人饮用来自地下水源的水。更多人则从自家的井中取水，当然也是开采地下水源而获得的。靠地下水系统用水的人数量少些，而靠地面水系统用水的人一般则多些。世界水源的数量和质量取决于我们如何选择用水。我们的用水是消耗性的，即水不能回到原始状态（如饮用水），或者是非消耗性的。非消耗性的使用可使水无论是污染过的还是未污染的都回到水系。水力发电就是非消耗性使用的一个例子。

Section 2 Brief Introduction to the World Water Resources

About 110,000 km³ of fresh water precipitates on the continents each year. Much of this evaporates or is absorbed by plants. About 43,000 km³ flows through the world's rivers. Of this renewable fresh water, it is thought that about 9,000 km³ is readily available for human use, and that somewhat more than 6,000 km³ of freshwater is withdrawn from all sources (World Meteorological Organization, 1997).¹

About 69% of world freshwater withdrawals are for agriculture, 23% for industry and 8% for direct human use (World Resources Institute, 1998).² At first glance there seems to be adequate renewable freshwater, but when uses for ecosystem preservation, large differences in the pattern of regional availability and use, and the expense of developing additional supplies are considered, there is less water for human use than might be supposed. Moreover, taking into account population and economic growth, both of which contribute to increased demands on and pollution of water supplies, world fresh water is expected to become substantially more stressed in future decades.³

From a world population total of 5.7 billion in 1995, the medium variant United Nations (1996) population estimate for 2020 is 7.7 billion. The forecasts in Netherlands Central Planning Bureau (1992), when extrapolated, suggest that world Gross Domestic Product (GDP) will grow from \$U. S. (1995) 27.8 trillion in 1995 (World Resources In-

stitute, 1998) to more than \$U. S. (1995) 50 trillion in 2020.

As with many problems, the water problem breaks down into component parts which, though interrelated, are amenable to a range of different solutions. Two particularly difficult and costly problems will be maintaining and improving water quality, and insuring that those on the margins have access to safe drinking water. As to the first, some data show that many of China's river reaches are so polluted that they are unsuitable for direct human contact, although such contact is a regular part of life in that country. As to the second, it is usually estimated that at least 20% of the world's population, or more than 1 billion people, lack access to safe drinking water (World Meteorological Organization, 1997).

New Words

precipitate [pri'sipiteit] *n.* 沉淀物

vt. 猛抛, 使陷入, 促成, 使沉淀

vi. 猛地落下

adj. 突如其来的, 陡然下降 (或下落) 的, 贸然轻率的

continent ['kɒntinənt] *n.* 大陆, 陆地

absorb [əb'sɔ:b] *vt.* 吸收, 吸引

plant [plɑ:nt] *n.* 植物, 庄稼, 工厂, 车间, 设备

vt. 种植, 栽培, 培养, 安置

vi. 种植

renewable [ri'nju(:)əbl] *adj.* 可更新的, 可恢复的

readily ['redili] *adv.* 乐意地, 欣然, 容易地

available [ə'veiləbl] *adj.* 可用到的, 可利用的, 有用的, 有空的, 接受探访的

availability [ə'veilə'biliti] *n.* 可用性, 有效性, 实用性

withdraw [wið'drɔ:] *vt.* 收回, 撤消

vi. 缩回, 退出

v. 撤退

source [sɔ:s] *n.* 来源, 水源, 消息来源, 原始资料, 发起者; 源, 源极

withdrawal [wið'drɔ:əl] *n.* 收回, 撤退, 退回, 取消, 退隐, 停止服药, 退股

agriculture ['ægrɪkʌltʃə] *n.* 农业, 农艺,

农学

industry ['ɪndəstri] *n.* 工业, 产业, 行业, 勤奋

adequate ['ædikwit] *adj.* 适当的, 足够的

ecosystem [i:kə'sistəm] *n.* 生态系统

preservation [ˌprezə(:)'veɪʃən] *n.* 保存 [管, 护]; 储藏; 保持; 维护

regional ['ri:dʒən(ə)l] *adj.* 整个地区的, 地方的, 地域性的

additional [ə'dɪʃənəl] *adj.* 另外的, 附加的, 额外的

supply [sə'plai] *n.* 补给, 供给, 供应品

vt. 补给, 供给, 提供, 补充, 代理

vi. 替代他人职务

contribute [kən'tribju:t] *v.* 捐助, 捐献, 贡献, 投稿

increase [in'kri:s] *n.* 增加, 增大, 增长

vt. 增加, 加大

vi. 增加, 繁殖

demand [di'mɑ:nd] *n.* 要求, 需求 (量), 需要

v. 要求, 需要, 要求知道, 查询

substantially [səb'stænʃ(ə)li] *adv.* 主要地; 实质上地; 重大地; 相当大地

medium ['mi:djəm] *n.* 媒体, 方法, 媒介

adj. 中间的, 中等的, 半生熟的

variant ['vɛəriənt] *adj.* 不同的

n. 变量

estimate ['estimeit] *v.* 估计, 估价, 评估

n. 估计, 估价, 评估

forecast ['fɔ:kəst] *n.* 先见, 预见, 预测, 预报

vt. 预想, 预测, 预报, 预兆

extrapolate [eks'træpəleit] *v.* 推断, [数] 外推

trillion ['triljən] *n.* [美、法] 万亿, 兆; [英、德] 百亿, 百万兆; 大量

institute ['institju:t] *n.* 学会, 学院, 协会
vt. 创立, 开始, 制定, 开始 (调查), 提起 (诉讼)

component [kəm'pəunənt] *adj.* 组成的, 合成的, 成分的, 分量的

n. 部分; 成分, 组分 [元]; 分力, 分向量; 支量, 支命题; 元件

interrelate [intə(:)ri'leit] *v.* (使) 相互关联

amenable [ə'mi:nəbl] *adj.* 应服从的, 有服从义务的, 有责任的

maintain [men'tein] *vt.* 维持, 维修, 继续, 供养, 主张

insure [in'ʃuə] *vt.* 给……保险
v. 确保

margin ['mɑ:dʒin] *n.* 页边的空白, (湖、池等的) 边缘, 极限, 利润, 差数, (时间、金额等的) 富余

vt. 加边于, 加旁注于

access ['ækses] *n.* 通路, 访问, 入门
vt. 存取, 接近

reach [ri:tʃ] *n.* 延伸, 区域, 河段, 范围, (车子前后轴的) 连接杆, 横风行驶

vt. 到达, 达到, 伸出, 影响

vi. 达到, 延伸, 伸出手, 传开

pollute [pə'lut, -'ljut] *vt.* 弄脏, 污染

lack [læk] *n.* 缺乏, 短缺的东西

vt. 缺乏, 没有, 需要

vi. 缺乏, 没有

Phrases and Expressions

at first glance 乍看

in the pattern of 以……形式

take into account 重视, 考虑

economic growth 经济增长

Gross Domestic Product (GDP) 国内生

产总值

break down into 分成……

have access to 有权使用

river reach 河段

Notes

1. Of this renewable fresh water, it is thought that about 9,000 km³ is readily available for human use, and that somewhat more than 6,000 km³ of freshwater is withdrawn from all sources.

这些可再生的淡水中约有9,000km³可为人类所用, 来自各种渠道的淡水约为6,000km³以上。

句中 that about 9,000 km³ is readily available for human use 和 that somewhat more than 6,000 km³ of freshwater is withdrawn from all sources 由 and 连接, 是句中真正的主语。

2. About 69% of world freshwater withdrawals are for agriculture, 23% for industry

and 8% for direct human use.

地球上约有 69% 的淡水用于农业, 23% 用于工业, 8% 为人类直接所用。

句中 23% 和 8% 后面都省略了 of world freshwater withdrawals are.

3. Moreover, taking into account population and economic growth, both of which contribute to increased demands on and pollution of water supplies, world fresh water is expected to become substantially more stressed in future decades.

此外, 若考虑人口和经济增长对供水的需求, 以及对水造成的污染等因素, 地球上淡水在未来几十年中可能会变得紧张。

句中 which 指代 population and economic growth, increased demands on and pollution of water supplies 均作其前面 to 的宾语。

Questions

1. How much of fresh water precipitates on the continents each year?
2. Is there adequate renewable freshwater? Why?
3. What are the two particularly difficult and costly problems?

参考译文

世界水资源简介

每年陆地上约有 11 万 km^3 的淡水凝结成雨或露等。其中大部分都蒸发掉或由植物吸收。约有 4.3 万 km^3 经由世界河流流动。这些可再生的淡水中约有 9,000 km^3 可为人类所用, 估计来自各种渠道的淡水约有 6,000 km^3 以上。(世界气象组织, 1997)

地球淡水中约有 69% 用于农业, 23% 用于工业, 8% 为人类直接所用 (世界资源研究所, 1998)。乍一看来, 可再生的淡水似乎很充足, 但若考虑用于生态系统保护、区域水有效性与水使用格局的巨大差异以及开发更多供水的费用时, 人类所用之水就比想象的要少了。此外, 若考虑人口和经济增长这两个增加供水需求并对水造成污染的因素, 地球淡水在未来的几十年中可能会相当紧张。

1995 年世界总人口为 57 亿, 联合国 (1996) 估计到 2020 年世界人口将为 77 亿。据荷兰中央规划局 (1992) 的推断预测, 世界 GDP 将从 1995 年的 27.8 万亿美元增加到 2020 年的 50 万亿美元。(世界资源研究所, 1998)

问题虽多, 但水问题可归结为要素问题。这些要素尽管内部相关, 但应该用来制订一系列不同的解决问题的方案。两个尤其棘手并且代价昂贵的问题就是: 保持并改善水质、确保那些用水紧缺的人们可饮用安全水。至于前者, 有资料表明, 中国许多河段污染如此严重以至于不适合人类直接接触, 尽管这种接触是该国日常生活的一部分。至于后者, 通常估计, 至少 20% 的世界人口或 10 亿人口短缺安全饮用水。(世界气象组织, 1997)

Unit 2

Section 1 Water Availability and Water Resources Deficit

Water resources distribution over the territory of the Earth is uneven. Also they disagree with population spread and economic development. These are very clearly revealed by analysing and comparing the specific water availability for a single period of time for different regions and countries. The specific water availability represents the value of actual per capita renewable water resources.

For every design level the specific water availability is determined by dividing water resources without water consumption by the population number. In this case, water resources are assumed to be the river runoff formed in the territory of the given region and summed up with half the river water inflow from outside.¹ So, the specific water availability is meant the residual (after use) per capita quantity of fresh water. Obviously, as population and water consumption grow, the value of specific water availability decreases.

The values of specific water availability were obtained for all natural – economic regions and selected countries for the 1950–2025 period. As expected, their analysis revealed a strong unevenness in their distribution over the Earth's territory.

For instance, the greatest water availability of 170~180 thousand m³ per capita for 1995 is in the regions of Canada with Alaska and in Oceania. At the same time, in densely populated regions of Asia, Central and South Europe, and Africa the modern water availability is within 1.2~5 thousand m³ per year. In the north of Africa and on the Arabian Peninsula, it is as much as 0.2~0.3 thousand m³ per year. It is worth mentioning that water availability of less than 2,000 m³ per year per capita is considered to be very low, and less than 1,000 m³ per year catastrophically low.² With these values of water availability, very serious problems arise unavoidably with population life – support, industry and agriculture development.

New Words

distribution [ˌɪstriˈbjʊːʃən] *n.* 分配, 分发, | 发送, 发行

配给物, 销售, 分布状态, 区分, 分类; uneven [ˈʌniːvən] *adj.* 不平坦的, 不平均