In the Land of Typhoons, Why Are Power Poles Slow to Disappear in Japan?

Surprisingly, only 8% of the electric power lines throughout the 23 wards of the Tokyo Metropolis are installed underground. The recent experience of Tokyo's close neighbor Chiba Prefecture highlights Japan's vulnerability to electricity transmission during a natural disaster.

Typhoon Faxai triggered a massive blackout, mainly due to utility poles being destroyed beyond imagination by the typhoon's powerful winds. Even after two weeks, the massive blackout across Chiba Prefecture could not be fully restored.

Experts have suggested that fundamental readiness measures for such disasters require the "disappearance of utility poles." The government has also expressed intentions to speed up its plans to bury power lines underground.

The reality, however, is that Japan is falling far behind compared to major cities in regions such as Europe. As advanced as Japan's infrastructure is in so many ways, why is the removal of roadside utility poles so sluggish?

2000 Utility Poles Damaged

Heavily tilted utility poles, electric cables dangling lifelessly and fallen trees blocking the roads… The operation to restore power in Chiba proved to be extremely difficult, with heavily tilted utility poles, electric cables dangling lifelessly and fallen trees blocking the roads… Recovery workers sighed wearily, saying, "We can't see the end," and disaster victims in the area were faced the severity of life with no electricity.

A 56-year-old restaurant owner in the Chuo district of Chiba City was forced to throw out food supplies in his refrigerator and freezer because of the power outage. Then, even though his power was restored in three days, it took him another two days to procure new food supplies because the power failure's impact extended out to surrounding areas. "I'd like the power cables to be buried underground if damage like this can be prevented," the man expressed.

Utility poles were damaged in various ways by the storm, including direct damage from strong winds and secondary damage by tin roofs or other objects blowing into them. The Ministry of Economy, Trade and Industry, estimated that approximately 2,000 poles had fallen.

Land, Infrastructure, Transport and Tourism Minister, Kazuyoshi Akaba, commented on plans to move forward with burying utility cables underground, pointing out that the country and utilities need to work hand in hand in order to prevent the recurrence of the extensive damage caused by recent natural disasters.

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WWII Reconstruction in Background

Installation of utility cables below ground in Japan has proceeded at a very slow pace and actualization is proving to be a high hurdle to cross.

According to the MLIT (Ministry of Land, Infrastructure, Transport and Tourism), all utility cables are installed underground in such major cities such as London, Paris, Hong Kong, and Singapore. In Taipei, a high 96 percent of the cables are buried. In Osaka, however, only 6% are installed underground, and in Tokyo's twenty-three wards a mere 8% of utility cables are underground. (Domestic numbers are estimated according to a survey conducted by the MLIT at the end of 2017)

In other countries the "no power pole" concept has long been utilized for aesthetic reasons when designing infrastructure in urban areas. However in Japan, the priority after World War II was to reconstruct the country as quickly as possible. The outcome was use of above-ground utility poles for electrical cables because they were "quicker and cheaper," according to the National Institute for Land and Infrastructure Management.

This allowed for the effective delivery of electricity nationwide. However, because the cables came directly in contact with wind and rain, their vulnerability was exposed every time a natural disaster occurred. Also, prolonged periods of blackouts particularly stand out due to the increased number of disasters in recent years.

Given the circumstances, the Act to Boosts the Disappearance of Utility Poles was adopted in 2016, and the nation hoisted the goal of starting construction to bury cables along roads stretching over 1,400km within a span of 3 years from 2018 to 2020.

High Costs Becoming A Burden

Still, an accelerated implementation of the plan remains uncertain.

Professor Shoichi Akiba of the Department of Civil Engineering at Nihon University's College of Industrial Technology points out that one of the reasons for the delay is the high cost of construction.

According to the land ministry, it will cost about ¥530 million JPY (about $5 million USD) per kilometer for the most standard construction method, which requires pipes to be buried underground so that the electrical cables can run through them.

Besides transmission cables which electricity companies will be responsible for, local governments and road administrators will shoulder construction costs of around ¥350 million JPY ($3.3 million USD) per kilometer. Although 50% of the costs of moving electric cables underground will be supported by the national government, local governments will still need to be responsible for around ¥170 million JPY ($1.6 million USD) per kilometer. Considering the financial difficulties experienced by many local governments, many will think twice about going forward with the plan.

A simplified construction method where the cables are directly buried underground, also popular overseas, costs only around 260 million JPY (about $2.4 million USD) per kilometer. However, installing a utility pole instead is only a fraction of that cost per kilometer.

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Another dilemma is the lengthy construction period. In order to replace utility poles, water and gas pipes also have to be moved and branch- offs of utilities to individual homes must be constructed. It may take as long as 7 years from the design stage to completion of the infrastructure.

On another note, more than a few downsides of underground cables have been pointed. Inspection for problems can be conducted visually with utility poles. However, this would be impossible once the cables are buried underground and when repairs are required, digging up the ground could be required. Such costs may very well bounce back in the form of electric bill hikes.

Regardless, Professor Akiba adamantly emphasizes, “Utility poles must disappear if protecting lives is the priority. Japan needs to accelerate the nation’s understanding that this is a necessary burden, and move forward to meet the standards set by the international community without further delay.”

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なぜ日本で「無電柱化」進まないのか　東京２３区でも８％

台風１５号がもたらした千葉県の大規模停電は、発生から２週間余りが経過した２６日も完全解消には至っていない。強風によって電柱が想像を超えて倒壊したことが停電の主な要因で、専門家は根本的な対策として、電線を地中に通して電柱をなくす「無電柱化」の必要性を訴え、政府も加速させる意向を示す。現状は欧州などの主要都市に比べて大きく立ち遅れている日本。なぜ無電柱化が進まないのだろうか。

●被害２０００本

大きく傾いた電柱に、力なく垂れ下がった電線、行く手を阻むように道路をふさぐ倒木…。作業員たちが「終わりが見えない」と漏らした今回の復旧作業は難航を極め、被災者らに「電気のない生活」の過酷さを改めて突き付けた。

千葉市中央区の飲食店経営の男性（５６）は、停電で冷蔵庫や冷凍庫に入れていた食材の廃棄を強いられた。さらに３日で停電が復旧しても周囲で影響が広範囲に残ったため、食材調達に２日も要したという。男性は「被害を防げるならば、電線を地中化してもらいたいね」と漏らした。

電柱の被害は、強風によるものや、飛んできたトタン屋根による損傷など多岐にわたる。経済産業省が見積もる今回の被害は計約２０００本。台風後、現地を視察した赤羽一嘉国土交通相は「同じことを繰り返さないため、総括として前に進めなければならない」と話し、無電柱化を進める考えを示している。

●背景に戦後復興

無電柱化はこれまで国内で遅々として進んでおらず、実現への壁は高い。

国交省によると、ロンドンやパリ、香港、シンガポールといった主要都市の無電柱化は軒並み１００％。台湾の台北も９６％と高水準だが、大阪市は６％で、東京２３区でもわずか８％（国内の数値は平成２９年度末の国交省調べ）にとどまる。

海外では景観などの観点から都市計画で古くから無電柱化を進めてきたが、日本では戦後の復興を急ぐ過程で「安く、早く整備できるとして電柱に電線を張りめぐらせた」（国土技術政策総合研究所）結果だという。

そのため、効率的に電力を届けられるようになったが、風雨に直接さらされることから災害の度に脆弱（ぜいじゃく）さが露呈。また、近年は災害が多発する傾向にあり、停電の長期化が目立つようになった。

こうした中、平成２８年に無電柱化推進法が成立し、国は昨年度から令和２年度までの３年間で１４００キロの道路での着工を目標に掲げている。

●高コスト足かせ

だが、加速度的な普及は見通せていない。

その要因の一つを、日本大生産工学部の秋葉正一教授（土木工学）は「敷設コストの高さがある」と指摘する。

国交省によると、地中に管を張りめぐらせ、その中に送電ケーブルを入れる一般的な方式では、１キロ当たり約５・３億円かかる。

このうち自治体など道路管理者が負担するのは、電力会社が負担する送電ケーブルなどの施設を除く土木工事費（約３・５億円）。国から半分の支援が得られるものの、自治体は約１・７億円の負担を強いられ、財政状況が厳しい地方を中心に二の足を踏む結果になっている。

海外で普及している地中に直接ケーブルを埋める簡略化した工事方式でも１キロ約２・６億円かかるとされるが、電柱の場合、１キロ数千万円で済むとされる。

さらに工期の問題がある。無電柱化する際、水道管やガス管を動かしたり、各家庭へ分岐したりする工事などがあり、設計から完成まで約７年かかるという試算もある。

一方、無電柱化自体のデメリットを指摘する声も少なくない。電柱だと目視での点検が可能だが、地中設備ではできず、故障の際は地面を掘り起こす作業を強いられるケースが出てくる。こうしたコストや維持費が電気料金などに跳ね返る可能性もぬぐえないのだ。

それでも秋葉教授はこう強調する。「命を守ることを最優先にすれば、無電柱化は必要。国は負担を伴うものであることの国民の理解を促進させ、一日も早く国際社会と肩を並べる状況にすべきだ」

出典:なぜ日本で「無電柱化」進まないのか　東京２３区でも８％
https://www.sankei.com/affairs/news/190926/afr1909260064-n1.html