

1. 地球温暖化に起因するリスクと By ALL で取り組む適応策

我が国の大都市の多くは洪水時の河川水位より低い低平地に位置しており、洪水氾濫に対する潜在的な危険性が極めて高い。これまで、洪水を安全に流下させるための河道拡幅、築堤、ダム等の治水対策により、治水安全度は着実に向上してきている。一方、近年毎年のように水害が発生している。こうした状況を踏まえ、今後の気候変動による水害の頻発化・激甚化も踏まえ、河道掘削、築堤、ダムや遊水地などの河川整備等の加速化を図るとともに、流域全体を俯瞰し、国・都道府県・市町村、地元企業や住民などあらゆる関係者が協働してハード・ソフト対策に取り組む「流域治水」の取組を強力に推進する必要がある。

流域治水では、集水域と河川区域のみならず、氾濫域も含めて一つの流域として捉え、地域の特性に応じ、①氾濫をできるだけ防ぐ・減らすための対策、②被害対象を減少させるための対策、③被害の軽減、早期復旧・復興のための対策をハード・ソフト一体で総合的、かつ、多層的に進めることとしている。

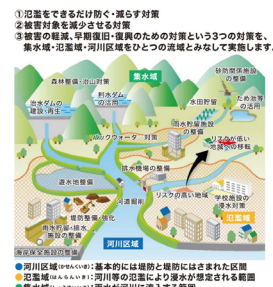


図1 流域治水のイメージ図

2. 首都東京における災害リスクと適応策

荒川の下流部は、我が国の発展とともに沿川都市に急激な人口・資産の増加を支えてきた。その一方で、増加する水需要等を支えるために地下水や水溶性天然ガスが汲み上げられ、広域地盤沈下が発生し、満潮位以下の土地、いわゆるゼロメートル地帯が広範囲に広がり、水害リスクを抱えることとなった。

仮に荒川堤防が決壊した場合にはまさに首都水没となり、我が国に壊滅的な被害が生じ、その機能が著しく損なわれる恐れがある。

この地域での関係者の協働による流域治水として、災害に強い首都「東京」形成ビジョンに基づき、国・都・区が連携して、避難のあり方等を踏まえた高台まちづくりを推進しており、その一環として、高規格堤防整備事業についても新たな仕組みの導入を検討中。ハード整備以外にも、水害からの避難に際し、河川からの越水や決壊に至るまでに猶予時間に自治体が指定する避難所のみならず、氾濫水から難を逃れる安全な避難場所へ移動する「分散避難」を目指すこととしている。

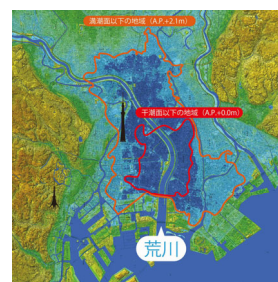


図2 低地帯の地盤高平面図

3. 南海トラフ、首都直下地震等巨大地震リスクと耐震対策

地震発生後数分から数十分で巨大な津波が関東から九州の太平洋側に押し寄せ、沿岸部を中心に広域かつ甚大な被害の発生が想定される。また、首都直下地震が発生した場合、強い揺れに伴う建物の倒壊や火災により、特に密集市街地で甚大な被害の発生が想定される。ゼロメートル地帯が広がる荒川下流域では、いかなる時も堤防機能を発揮するよう、堤防や水門樋管等の耐震対策を進めている。また、災害対応活動に備えて、河川敷に緊急用船着場等を整備。災害時の復旧活動に必要な資機材や救援物資等の積み卸し、運搬・輸送など、国道等の緊急輸送道路等と連携して、緊急時の輸送ネットワークを形成することが可能。

Disaster Risks in Tokyo Capital and Efforts by the Water Management and Land Conservation Bureau

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1 , Risks Resulting from Global Warming and Adaptation Measures Undertaken by ALL

Many of our country's major cities are located in low-lying areas lower than the river water levels during floods, posing a very high potential risk of flooding. Over time, flood control measures such as river widening, embankment construction, and dam construction have steadily improved flood safety by safely discharging floods. However, in recent years, floods have been occurring almost annually. In light of these circumstances and considering the increasing frequency and severity of flood disasters due to future climate change, it is necessary to accelerate river development measures such as river excavation, embankment construction, dams, and reservoirs, and to vigorously promote "watershed management" efforts where all stakeholders including national, prefectural, municipal governments, local companies, and residents collaborate on both hardware and software measures. In watershed management, not only the watershed and river basin areas but also flood-prone areas are considered as one watershed, and comprehensive and multi-layered measures are implemented in both hardware and software aspects to (1) prevent and reduce flooding as much as possible, (2) reduce damage targets, and (3) mitigate damage and promote early recovery and reconstruction, according to the characteristics of each region.

2 , Disaster Risks and Adaptation Measures in Tokyo Capital

The downstream area of the Arakawa River has supported a rapid increase in population and assets in urban areas along the river as our country has developed. On the other hand, groundwater and water-soluble natural gas have been pumped up to support increasing water demands, leading to widespread land subsidence and the expansion of low-lying areas below the high tide level, known as "zero-meter zones," which are at risk of flooding. If the Arakawa River embankment were to collapse, the capital would be submerged, causing catastrophic damage to our country and significantly impairing its functions. As part of watershed management by stakeholders in this region, based on the vision of creating a disaster-resistant capital "Tokyo," the national government, Tokyo Metropolitan Government, and municipalities are collaborating to promote high-ground town development, taking into account evacuation measures. As part of this effort, the introduction of a new framework for high-standard embankment construction projects is under consideration. In addition to hardware development, aiming for "dispersed evacuation" where residents move to safe evacuation sites to escape flooding, not only designated evacuation centers specified by local governments but also safe evacuation sites to escape floodwaters before they overflow or breach from rivers.

3 , Risks of Major Earthquakes such as Nankai Trough and Tokyo Metropolitan Earthquake, and Seismic Countermeasures

In the event of a major earthquake, a massive tsunami is expected to strike the Pacific coast from Kanto to Kyushu within several minutes to tens of minutes after the earthquake, causing extensive and devastating damage mainly along the coast. Also, if a Tokyo Metropolitan Earthquake occurs, significant damage is expected, especially in densely populated urban areas, due to building collapses and fires caused by strong shaking. In the downstream area of the Arakawa River, where zero-meter zones are widespread, seismic countermeasures such as seismic reinforcement of embankments and sluice gates are being implemented to ensure that the embankment functions at all times. Additionally, emergency boat landing facilities are being developed along riverbanks in preparation for disaster response activities. By coordinating with emergency transport routes such as national highways, a transportation network for emergencies can be formed to facilitate the loading and unloading, transport, and delivery of necessary equipment and relief supplies for recovery activities during disasters.

(Translation by the Secretariat)