



MENTERI PEKERJAAN UMUM
DAN PERUMAHAN RAKYAT

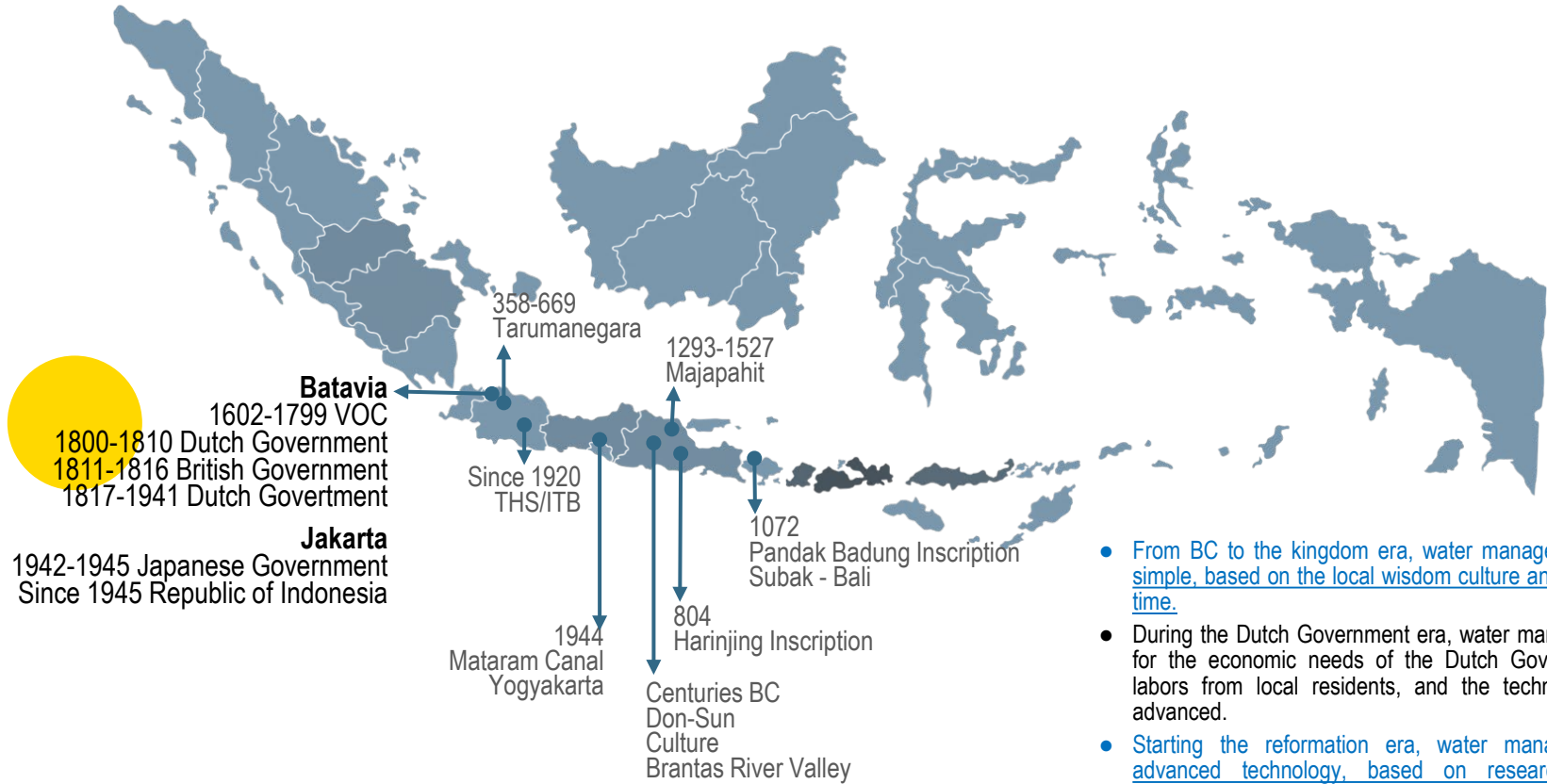
HISTORICAL TRACE OF WATER MANAGEMENT IN INDONESIA

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Development Stages of Water Management in Indonesia

- Since BC, water management was developed in Java and Bali
- Starting from the independence in 1945, water management has developed rapidly in all provinces in Indonesia



- From BC to the kingdom era, water management was still very simple, based on the local wisdom culture and the religion at that time.
- During the Dutch Government era, water management was more for the economic needs of the Dutch Government, employing labors from local residents, and the technology was not yet advanced.
- Starting the reformation era, water management has used advanced technology, based on research and laboratory investigations, for the welfare of the people.

LONG HISTORY OF WATER MANAGEMENT IN INDONESIA

The water management in Indonesia has a very long chain from time to time, the 4th century AD during the Hindu-Buddhist Kingdom era, the growth of the Islamic era, the arrival of west nations, the Japanese Government era, the early period of independence, then the old and new order government, reform government era from 1998 to the present.

Source: www.proprofs.com

During the era of Dutch Government, the forced cultivation policy was implemented by Governor General Johannes van den Bosch, and it required irrigation facilities. Several weirs had been built, including the first weir built in 1832 at Kali Sampean, but then many had failed. Therefore, BOW (Department of Public Works) was formed in 1854, irrigation schemes and dams were more developed.

The Hydrodinamische (Hydraulic) Laboratory was built in 1936 to optimize the performance of irrigation structures.

Source: www.scribd.com



The priorities also differ from era to era. It was generally used for irrigation, agricultural sector and food self-sufficiency.

During the reform era the target priorities are **conservation, utilization, controlling water related disaster, and integrated water management.**



WATER MANAGEMENT IN CENTURIES BC ERA

- Immigrants with it Don-Son culture settled in Brantas Valley and doing agriculture activities which was called cultivating dry paddy field.
- As the flooding often struck causing agriculture failure, they developed **new technique called embankments, simple weirs, etc.** In fact, many years later, paddy with continuous water showed better yields, rice plants were also growing, there are rainfed paddy fields, “gogo rancah” and swamp rice. This fact led to **the creation of a simple irrigation technology**, which is considered to be **the origin of irrigation**.
- In the reports of the Dutch Government, **irrigation was defined** as a waterworks that technically carried water through canals to agricultural land, and after the water was utilized, it was then channeled return into the river.

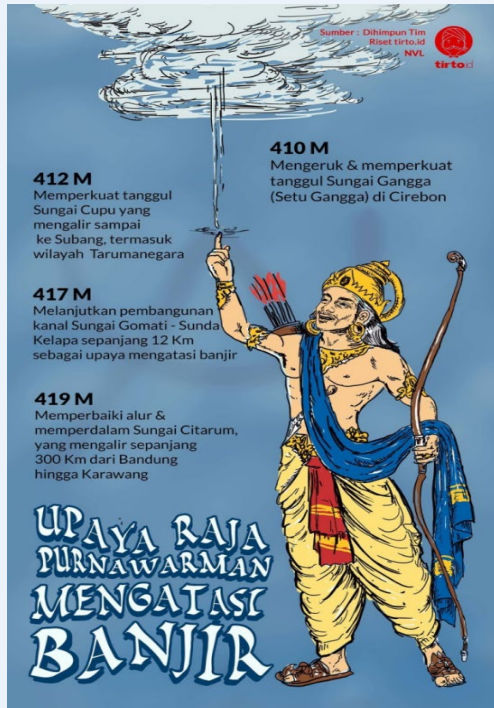


Source: koropak.co.id



Source: cerdika.com

WATER MANAGEMENT IN THE TARUMANEGARA ERA



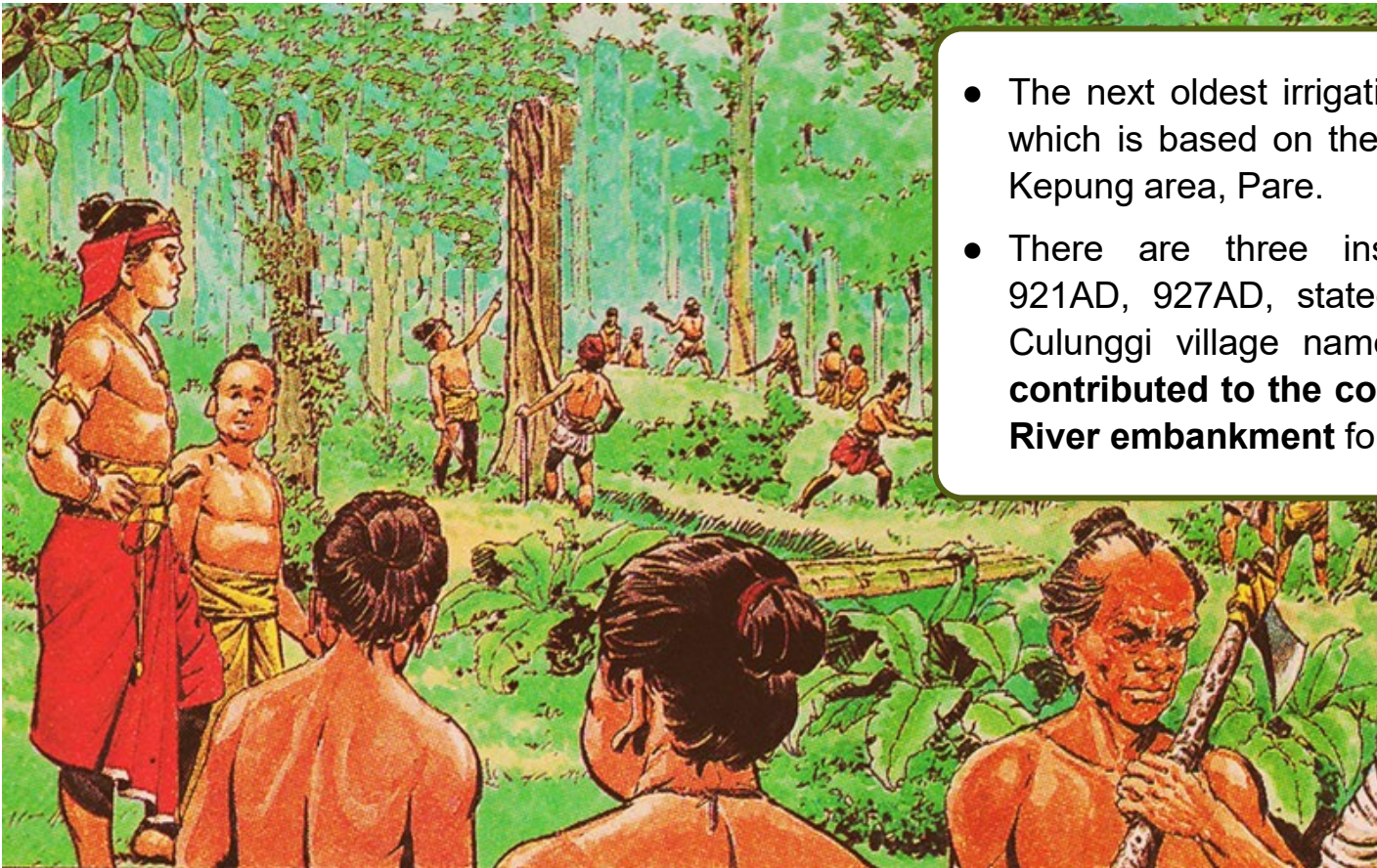
King Purwarman's efforts to deal with flooding
Source: tirto.id



Tugu Inscription
Source: indonesia.go.id

- The data of the oldest inscriptions in Indonesia stated that the oldest waterworks channel was made in the village of Tugu near Cilincing in the 5th century AD. King Purnawarman ordered to excavate the Candrabhaga River which functions as a flood control drainage. He built a new royal capital in 397 AD, which was located closer to the coast, called Sundapura city.
- In 417 AD, Purnawarman ordered to excavate the Gomati and Candrabaga Rivers with a length about 11 km.

WATER MANAGEMENT IN THE EARLY MAJAPAHIT ERA

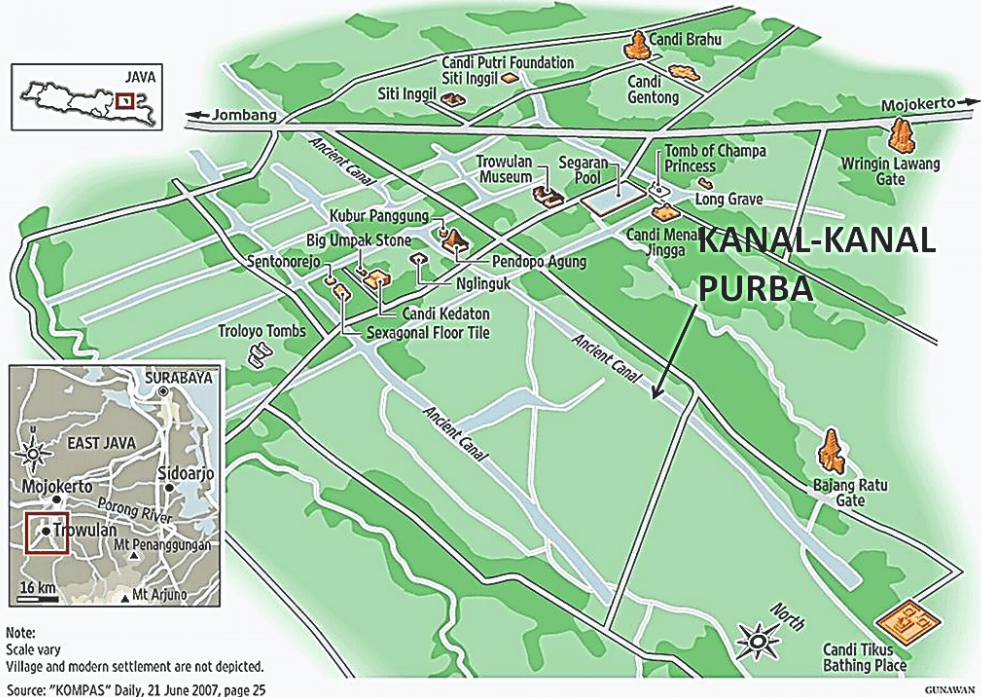


- The next oldest irrigation building is in East Java, which is based on the Harinjing Inscription, in the Kepung area, Pare.
- There are three inscriptions marked 804AD, 921AD, 927AD, stated that a local leader from Culunggi village named **Bhogawanta Bori** had contributed to the construction of the **Harinjing River embankment** for flood control and irrigation.

Bhagawanta Borī tried to prevent environmental degradation and to practice caring for others
Source: kekunoan.com

WATER MANAGEMENT IN THE GOLDEN AGE OF MAJAPAHIT ERA

Trowulan Archaeological Site



- In 1037 there was a big flood of Brantas River which inundated Kemiri area, and resulted in catastrophic damage to agricultural land and economic disruption. Right after King Airlangga ordered to repair the damage by **the construction of weirs and embankment** at Waringin Sapta and Kelagan, Brantas returned to flow to its originated.
- King Hayam Wuruk ordered to rehabilitate the Harinjing weir to be more efficient and stronger. He also ordered to build **The Pikatan Reservoir** with a dimension of 175 meters by 350 meters, with a volume of 350.000 m³. This reservoir was also used as **defense purposes** during the Majapahit era.

Majapahit is a kingdom with the ability to control water resources
Source: indonesiancultures.com

DEMOCRATIC WATER MANAGEMENT IN BALI SINCE 11TH CENTURY AD

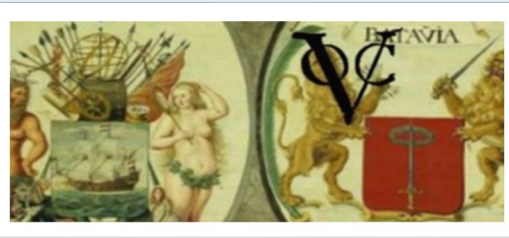


- In the 11th century, **community-based irrigation management, called Subak** had developed in Bali. It existed at least 3 centuries before the Majapahit era in Java.
- Based on the Pandak Badung inscription in 1072 AD, the word Subak comes from the Balinese language which refers to a **unique social and religious institution, which has its own and democratic arrangements from farmers in determining the use of irrigation water for rice growth.**
- Subak has proven it can improve the welfare of society, reflecting the harmony between nature and humans, humans and humans, and humans and God, through the philosophy of **Tri Hita Karana**. All of these can be seen in many sites and inscriptions of Hindu and Buddhist temples throughout the Indonesian archipelago.
- Subak has been designated as a **World Heritage** site at the 36th UNESCO World Heritage Committee in 2012, after waiting for 12 years since its initial proposal.

THE KING OF MATARAM DEVELOPED RICE FIELDS WHEN FIGHTING THE VOC



Source: yogya.inews.id



Source: ensipedia.id

During the Dutch Government era in 1602, wars continued to occur between the Kings in and outside of Java Island against the VOC.

The King of Mataram, **Sultan Agung**, mobilized troops from the Mataram to Batavia. Mataram lost the battle due to problem of food supplies. Afterward, Sultan Agung sent Mataram soldiers to settle along the north coast of Java Island to develop rice fields for rice supplies.

It is not clear whether the type of rice field is dryland, lowland paddy field, or irrigated paddy field.

IMPACTS OF THE CONSTRUCTION OF DAENDELS HIGHWAY

- After the VOC was disbanded, the Dutch East Indies returned to rule the archipelago. Governor General Herman Willem Daendels forced the people to build a **highway from Anyer to Panarukan. Its length was approximately 1.000 Km.**
- The existence of this road had changed Java spatial planning, driving economic growth and at the same time giving an **environmental impact.**

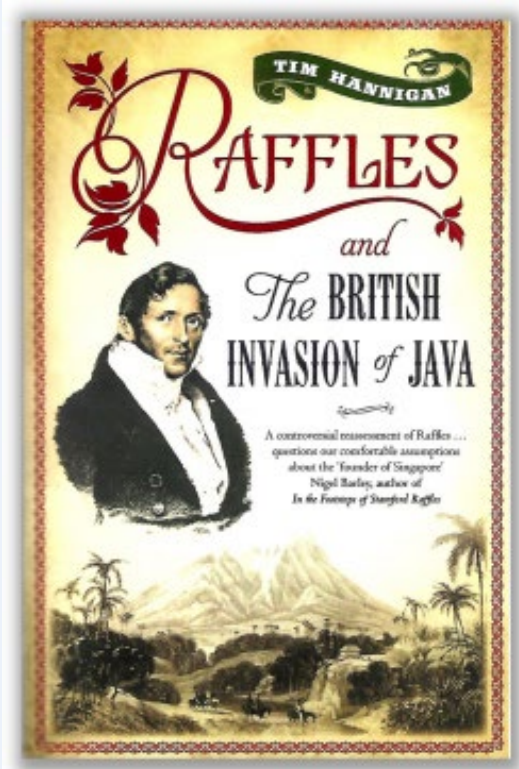


Source: tirto.id



Source: serbasejarah.blogspot.com

JAVA WAS AN EXPORTER OF RICE DURING THE RAFFLES ERA



Source: www.rivayat.my

- During Thomas Stamford Bingley Raffles era, who ruled from 1811 to 1816, focus on **the fate of the people, both in the field of education, culture and agriculture**. The History of Java written by Raffles in 1817 mentioned, it is said that Java was very good for agriculture, because the land was very fertile.
- The islands of Sumatra, Malacca, Borneo, Celebes, Maluku, and other small islands, are often **dependent on crops from Java**. In fact, every year around 6-8 thousand tons of rice were exported to Coromandel, Ceylon and to other places.
- **Simple irrigation** was carried out in the early of 19th century, namely by flowing water from rivers, springs, or small lakes to the people's fields, no machines or anything else was used to distribute water to these fields.

WATER MANAGEMENT IN THE VAN DEN BOSCH ERA

After the wars between nations in Europe were over, the British handed back their power in Indonesia to the Dutch. Governor-General Johannes van den Bosch created **the Forced Cultivation System or Cultuurstelsel**. This system was the most exploitative era in the economic practices of the Dutch East Indies. The system began by trying to **repair irrigation infrastructures to support the success of this program**, one of them namely the **Kali Sampean immigration scheme** was completed in 1832, which until 1847 was often rehabilitated because of many failures.



Source: donipengalaman9.wordpress.com

WATER MANAGEMENT IN BOW ERA

- In 1854 the **Department of der Burgelijke Openbare Werken (BOW)** or the Department of Public Works was founded in Indonesia. It was the starting point of a more technical development of water resources infrastructures. It **began to manage water resources and irrigation problems** and built as many as 28 dams (1902-1935) across the island of Java.
- In 1936, BOW built **Hydrodinamische Laboratorium (Hydraulic Laboratory)** then changed its name to **Waterloopkundig Laboratorium** at THS Bandoeng (it is called ITB now) to support the need for irrigation. The existence of this laboratory was **more apparent in dealing with water resources technology**. In 1936 to 1941, 5 dams were successfully constructed in Central and East Java.



Source: www.wikiwand.com



Waterloopkundig Laboratorium THS Bandoeng, 1941

WATER MANAGEMENT IN THE JAPANESE GOVERNMENT ERA

- In 1942 the Mataram Main Canal Network was built with a length of 31.2 km for agricultural, providing agricultural yields throughout the year in the northern part of Yogyakarta. **It is a historical policy with the slogan of "Throne for The People"**. This refers to the ingenuity and love of the King for his people. The King wanted to protect his people against Romusha forced labor.
- **The Mataram Canal** was important for the escape from romusha and prosperity of the majority people who were farmers. In the period 1941-1944 two dams were also built in Central Java, namely the Botok Dam and Krisak Dams.



daerah.sindonews.com



vredeburg.id

WATER MANAGEMENT IN THE REFORM ERA

- In the Reform Era, **the construction of dams was more numerous and wider in distribution, reaching 129 locations spread across.**
- The **policies and strategies of the Ministry of PUPR 2020-2024**, in regard to Water Resources as following:

A. Sustainable management of groundwater and raw water

- ✓ accelerating construction raw water supply
- ✓ improving integrated water resources management policies
- ✓ increasing environmentally technology in raw water management

B. Multipurpose reservoirs and irrigation modernization

- ✓ increasing water storage capacity and the storage function
- ✓ improving dam performance and reducing risk
- ✓ increasing the efficiency and performance of irrigation systems
- ✓ supplying water for high-value agricultural commodities

C. Infrastructure disaster resilience

- ✓ developing disaster resilient infrastructures
- ✓ supporting integrated management of water related disaster
- ✓ supporting watershed restoration and conservation

D. Public Private Partnership (PPP) achieving innovative finance

THANK YOU

**“THOUSANDS HAVE LIVED
WITHOUT LOVE, NOT ONE
WITHOUT WATER”**

*Wystan Hugh Auden/ British American
Poet, February 21, 1907 - September 29,
1973*



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