

JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

The Climate-Resilient Rice Farming Project in Pangasinan

A.2. General description of project and applied technologies and/or measures

Rice is a staple food in the Philippines and will remain a fundamental part of the daily diet. Traditional method of rice cultivation in the Philippines is characterized by continuously flooding or maintaining saturated conditions of the fields throughout the cropping season. This practice leads to significant amount of methane emissions and is responsible for about 50% of greenhouse gas (GHG) emissions in the agricultural sector of the Philippines [1].

One proven method to reduce GHG emissions and reduce water consumption during rice cultivation is Alternate Wetting and Drying (AWD) which is a low-cost technology developed by the International Rice Research Institute (IRRI). Under this practice, rice fields are intermittently irrigated and are left to dry to a safe level where sufficient water is still available to sustain plant growth without decreasing yield [2]. The farmers use a perforated tube to observe the water level and determine the proper timing of irrigation. This frequent aeration of rice fields limits the growth of microbes that are responsible for methane emissions in soils.

The project aims to shift water management practice of rice cultivation from continuous flooding to AWD across the irrigated rice fields mainly the province of Pangasinan in the Philippines, along with some other municipalities in Tarlac and Nueva Ecija. This can potentially reduce greenhouse gas emissions from rice cultivation by 30-70% [3]. Pangasinan is a major contributor to the country's rice production, being among top producers of paddy. In 2024, Pangasinan covered a harvested area of 256,212 hectares with total production of 1,213,670 tons, obtaining productivity of 4.74 tons/ha.

The project will conduct capacity building sessions for farmer participants regarding the proper implementation of AWD and other improved practices that are cost-reducing and yield-enhancing such as for land preparation, seed selection, nutrient management and pest management among others. Relevant data to comply with the requirements of the JCM methodology are collected by the project team of Creattura for each cropping season. In carrying out these activities, Creattura closely works with the National Irrigation Administration (NIA) and the irrigators associations (IA) in the Philippines.

The project will cover about 80 percent of the service area of the seven (7) National Irrigation Systems (NIS) managed by NIA Pangasinan Irrigation Management Office, together with the IAs. This translates to approximately 39,181 hectares and 27,787 farmers.* The NIS in Pangasinan are as follows:

1. Ambayoan River Irrigation System
2. Dipalo River Irrigation System
3. Lower Agno River Irrigation System
4. Agno River Irrigation System
5. Sinocalan River Irrigation System
6. San Fabian River Irrigation System
7. Dumoloc River Irrigation System

To facilitate continuing AWD implementation, farmer participants will receive a share of the profit after successful generation of JCM credits.

*The land area is based on the service area of NIS in Pangasinan reported by NIA as of December 31, 2023. The number of farmers is based on average farm size of 1.41 hectares per farmer based on the Rice-Based Farm Households Survey 2021-2022 conducted by the Philippines Rice Research Institute.

A.3. Location of project, including coordinates

Country	Republic of the Philippines
Region/State/Province etc.:	Province 1: Pangasinan Province 2: Tarlac Province 3: Nueva Ecija
City/Town/Community etc:	Municipalities and cities in Province 1: Alcala, Asingan, Balungao, Bautista, Binalonan, Bugallon, Calasiao, Dagupan City, Laoac, Malasiqui, Manaoag, Mangaldan, Mapandan, Natividad, Rosales, Umingan, Urdaneta City, San Fabian, San Jacinto, San Miguel, San Nicolas, San Quintin, Santa Barbara, Santa Maria, Santo Tomas, Tayug and Villasis Municipalities in Province 2: Moncada and San Manuel Municipality in Province 3: Cuyapo Below is a map showing these provinces:

[illegible]

A.4. Name of project participants

The Republic of the Philippines	National Irrigation Administration Regional Office No. 1 <i>(Participation is being formalized in accordance with NIA's internal procedures.)</i>
Japan	Creattura Co., Ltd.

A.5. Duration

Starting date of project operation	October 21, 2024
Expected operational lifetime of project	10 years

A.6. Contribution from Japan

The project is fully funded and operated by a Japanese company, Creattura. It generates local employment opportunities such as field staff for farmer training, monitoring and data collection activities and technical staff for greenhouse gas measurement. The project also provides additional incentives to farmer participants who demonstrate successful AWD implementation. Additionally, the project enhances farmer education on sustainable rice cultivation through training anchored on the PalayCheck System recommended by the Department of Agriculture-Philippine Rice Research Institute (PhilRice) which are conducted by Creattura's project staff.

Furthermore, the project advances technical expertise in GHG measurement. Through experts

engaged by Creattura, local project staff and select farmers receive specialized training and hands-on experience in conducting gas sampling for GHG emission measurement in rice paddy fields—a highly technical skill essential for impact quantification on climate change mitigation. Notably, this project is the first initiative to quantify emission reductions from AWD implementation specifically in Pangasinan.

Creattura has also created employment opportunities and enhanced the technical capacity of its local staff in specialized fields such as mapping with specialized software. Additionally, this company has facilitated discussion sessions with farmers to introduce automated technologies for monitoring water levels in paddy fields.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	PH_AM004
Version number	01.0

B.2. Explanation of how the project meets eligibility criteria of the approved methodology

Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	The project field is rice paddy field that changes water regime during cultivation period from continuously flooded to single or multiple drainage, or from single to multiple drainage. For the former, farmers have not conducted single or multiple drainage, as defined in Section B above, in the past 2 years prior to the start of the project, and for the latter, project participants have not conducted multiple drainage in the past 2 years prior to the start of the project.	<p>The project fields are located within the service area of NIS managed by NIA in Pangasinan. Creattura and NIA will generate geospatial vector data in shapefile format to delineate the geographical boundaries of each project field.</p> <p>To confirm that each project field is a rice paddy field, the project will refer to official records issued by NIA for each cropping season. In case such a document is not available, the project will utilize satellite images to verify rice cultivation in the project fields.</p> <p>The project aims to transition the water management practice during the rice cultivation period from continuous flooding to alternate wetting and drying (AWD), leading to either single or multiple drainage</p>

		<p>depending on field conditions. The project prioritizes fields in upstream areas of the irrigation system to promote equitable distribution, thereby improving the availability of water in downstream areas.</p> <p>A pilot study was conducted last 2024 Dry Season (October 2023 to April 2024), covering twelve (12) IAs within the service area of Dipalo River Irrigation System. Within the two (2) years prior to this pilot study (October 2021 to September 2023), no large-scale AWD project had been conducted in Pangasinan. Irrigation delivery across the NIS in Pangasinan is in accordance with the farmer's practice of continuously flooding the fields. Furthermore, according to the most recent Rice-Based Farm Household Survey (RBFHS) conducted by the Philippine Rice Research Institute (PhilRice) in 2022, only 6% of farmers in Pangasinan has implemented AWD or used observation wells for water management within 2017 to 2022.</p>
Criterion 2	<p>A drainage is considered fully completed when the water level is observed to reach 15 cm below the soil surface. To maintain yield, an irrigation is carried out within 2 days after the completion of the drainage. If the irrigation to be conducted within 2 days after the completion of drainage fails, project participants demonstrate that yield reduction has not resulted in significant difference between the reference and project field or has resulted from causes beyond the reasonable control of the project participants. Any evidence of the drainage not causing yield reduction is to be submitted.</p>	<p>Observation wells are installed across the project area during each cropping season as guide for participating farmers to drain their fields until water level reaches 15cm below soil surface before re-irrigation. Geo-tagged and time-stamped photos of observation wells are captured to indicate water level across the project area.</p> <p>To demonstrate that the change in water management practice does not cause significant yield reduction, rice yield sampling is conducted among the six (6) representative fields in each stratum in accordance with Appendix C of the methodology. These representative fields are where gases are collected to measure the amount of GHG emissions.</p>

Criterion 3	Single or multiple drainage is not required by the local or national legislation at the project field.	<p>There is no national or local legislation in the Philippines that requires single or multiple drainage at the project fields. While government policies promote the adoption of water-saving technologies such as AWD, they do not impose a mandatory requirement for drainage implementation.</p> <p>On June 14, 2016, NIA issued Memorandum Circular No. 35, series of 2016, declaring as a policy the adoption of AWD in all NIS, along with the provision of incentives and capacity building for farmers. However, its implementation has been limited to techno-demo farms and AWD remains voluntary for farmers with fields serviced by NIS.</p> <p>Additionally, various other policy documents support the use of water-saving technologies but do not mandate single or multiple drainage. These include:</p> <ul style="list-style-type: none"> - Memorandum Circular No. 35, series of 2024 “Guideline for the Preparation of the National Irrigation Administration (NIA)’s FY 2025 Plan and Budget Proposal”. This was issued by NIA on April 11, 2024. - Philippine Development Plan 2023-2028, Chapter 5: Modernize Agriculture and Agribusiness. This was issued by the National Economic and Development Authority. - The National Irrigation Master Plan 2020-2030. This was issued by NIA. - The Philippine Rice Industry Roadmap 2030. This was issued by the Department of Agriculture on September 2018. - Administrative Order 25 series of 2009 “Guidelines for the Adoption of Water Saving Technologies (WST) in Irrigated Rice Production Systems in the Philippines. This was issued by the
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		<p>Department of Agriculture on September 11, 2009.</p> <p>Despite these initiatives, AWD adoption remains low across the country. One of the key barriers is the absence of direct financial incentives for farmers, particularly in public-managed gravity irrigation systems where water is generally freely provided regardless of usage. Additionally, the labor intensity, need for technical knowledge, and prevailing perception that flooded paddies are essential for rice production deter many from adopting AWD. Carbon finance presents a viable mechanism to overcome these barriers by rewarding farmers for emission-reducing practices.</p>
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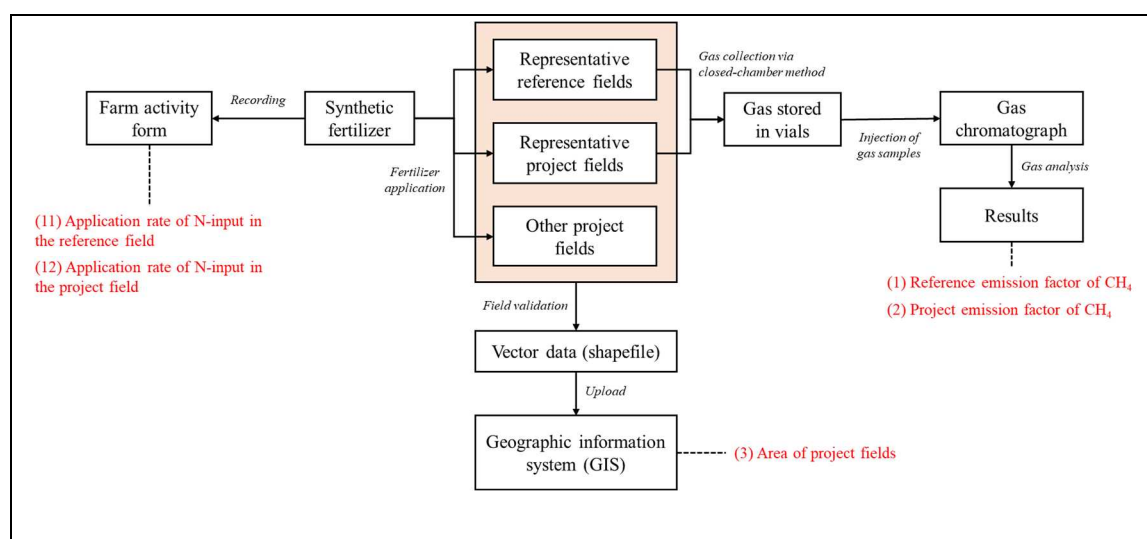
C. Calculation of emission reductions

C.1. All emission sources and their associated greenhouse gases relevant to the JCM project

Reference emissions	
Emission sources	GHG type
CH ₄ generated from rice paddy field due to activity of microorganism under anaerobic soil condition.	CH ₄
N ₂ O emissions from fertilizer application.	N ₂ O
CO ₂ emissions due to the utilization of drainage pumps used to drain water from rice paddy fields are optional.	CO ₂
CO ₂ emission due to utilization of irrigation pumps are optional.	CO ₂
Project emissions	
Emission sources	GHG type
CH ₄ generated from rice paddy field due to activity of microorganism under anaerobic soil condition.	CH ₄
N ₂ O emissions from fertilizer application.	N ₂ O
CO ₂ emissions due to the utilization of drainage pumps used to drain water from rice paddy fields.	CO ₂
CO ₂ emission due to utilization of irrigation pumps are optional.	CO ₂

C.2. Figure of all emission sources and monitoring points relevant to the JCM project

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C.3. Estimated emissions reductions in each year

Year	Estimated Reference emissions (tCO ₂ e)	Estimated Project Emissions (tCO ₂ e)	Estimated Emission Reductions (tCO ₂ e)
2025	375,708	222,863	145,202
2026	851,600	505,196	329,083
2027	930,292	552,220	359,168
2028	930,292	552,220	359,168
2029	930,292	552,220	359,168
2030	930,292	552,220	359,168
Total (tCO ₂ e)			1,910,957

D. Environmental impact assessment

Legal requirement of environmental impact assessment for the proposed project	No
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E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

At the early days of project inception, Creattura conducted several consultation meetings with experts from the Philippine Rice Research Institute (PhilRice) to learn from similar prior activities. These meetings were conducted last February 20, 2023, April 17, 2023, and July 14, 2023. The experts provided insights into the challenges and best practices in conducting farmer training for technology adoption and on the actual implementation of AWD. It was highlighted

that active involvement of NIA is key for the success of any project.

A consultation meeting with the Chief of Ambayoan-Dipalo River Irrigation System (ADRIS) and Lower Agno Irrigation System (LARIS), Engr. Agapito C. Yamat, Jr. was held in August 23, 2023 to discuss the willingness of NIA to upscale dissemination of AWD. Engr. Yamat confirmed that the NIA is indeed seeking funding and partners to implement such a project. Engr. Yamat was cognizant of the benefits that AWD can bring such as reduced volume of water used to produce a kilo of paddy and he was aware of the results of studies done by IRRI and PhilRice (i.e., 25% to 30% of water savings).

On September 14, 2023 before the start of 2024 dry season cropping, project briefing, and planning was conducted with the officers of the NIA ADRIS to propose a collaboration and get initial information on the coverage of the target NIS. After the initial discussions, NIA proposed potential sites to be covered during the pilot phase of the project including the personnel to be involved during the implementation. After finalizing the target areas, the project team of Creatura conducted a visit and courtesy call to the Regional Irrigation Manager of NIA Region 1, Engr. Danilo V. Gomez. He was informed that the pilot project would be established in the twelve (12) IAs in the Dipalo River Irrigation System in the municipalities of San Quintin, Umingan, and Balungao during the 2024 dry season. Engr. Gomez acknowledged the project and expressed full support.

Communication letters were sent to the respective local government units and meetings were conducted with the officials of the 12 IAs to present the project and get their feedback on the project and to commence planning for the possible sites for the conduct of AWD Field Schools (AWD FS) for the training of farmer members of the IAs. Additionally, communication letters were also being sent to the barangay officials for courtesy and for assistance in inviting farmers to attend the AWD FS. The field schools in the pilot phase served as a platform for both training farmers on AWD and collecting valuable feedback to refine the project before a wider roll-out.

The AWD FS were conducted from November 2023 until March 2024. These comprise of several sessions that encompass the best practices across rice growth stages. During the first session, farmers were also informed about the goals of project and the benefits of joining the project. Throughout the sessions, farmers were constantly consulted to solicit any concerns regarding AWD and the project in general.

After the completion of the pilot phase of the project, an end-season review was conducted last February 26, 2024 at NIA ADRIS Tayug Office which was attended by staff from Creattura, NIA, Pangasinan Provincial Agriculture Office and Municipal Agriculture Offices of San Quintin, Umingan and Balungao. The project team shared accomplishments, challenges, and strategies to enhance farmer recruitment, personnel mobilization, and data collection for the next cropping season. Creattura decided to proceed with expanding coverage of the project to other areas for 2024 wet season.

Prior to the start of 2024 wet season, series of consultation meetings and planning sessions were conducted with the officers of the new IAs to be covered particularly in the Ambayoan River Irrigation System. The IA officers including the Presidents of the Federation of IAs in ADRIS expressed support for the project. Courtesy calls and project briefings were also conducted with the LGU officials of the municipalities of Natividad, Tayug, San Nicolas, and Sta. Maria in Pangasinan.

On May 17, 2024, a meeting was conducted with NIA Central Office to present the accomplishments of the pilot phase. The meeting was attended by several officers from NIA Central Office, Creattura, Kubota Corporation and Tokyo Gas Co., Ltd. Several comments were raised by the representatives from the Office Administrator, Legal Services and Irrigation Engineering Center of NIA Central Office. They are interested to know about the environmental impact of the project and have requested an initial report on the emission reduction. Furthermore, an official letter from NIA Administrator, Engr. Eduardo Eddie G. Guillen, dated January 31, 2025, was forwarded to Creattura requesting for more pertinent information about the company and the project. Result of preliminary analysis of emission reduction for 2024 wet season was shared to NIA Central Office last February 28, 2025.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
PhilRice	Implementing large-scale AWD is highly challenging due to the longstanding practice of continuous flooding and the logistical complexities involved. It was suggested to start with a pilot in	Creattura reached out to NIA Region 1 and sought their recommendation on where to conduct a pilot study.

	selected areas and IA, prioritizing those with good infrastructure, such as well-maintained canals and no illegal turnouts, and with a higher concentration of farmers. Close cooperation with NIA will be critical to ensure successful implementation.	
NIA Region 1	Officials from NIA Region 1 expressed support and recommended the pilot sites. However, they suggested that NIA Central Office be informed of the activity.	An in-person meeting was conducted with the officials from NIA Central Office last May 17, 2024 to present the project and the accomplishments during the pilot phase.
	The officers from NIA ADRIS and LARIS requested to join the training for project staff to gain technical knowledge on AWD and better understand the overall project activities.	The officers from NIA ADRIS and LARIS were invited to join the training of project staff. This will be observed when rolling out to the other NIS.
	One of the Chiefs of NIS in Pangasinan raised concerns about scaling AWD implementation to cover about 80% of the service area, noting it has never been done at this scale. He also inquired about the number of observation wells and the possibility of using digital wells for remote data transmission.	<p>The Chief was informed that the project will hire dedicated staff to train farmers and collect relevant data. The project staff also mentioned that a pilot study was conducted during the 2024 dry season to demonstrate the concept. Additionally, observation wells will be installed for each lot.</p> <p>Creattura has launched a study leveraging satellite technology to improve monitoring for large-scale project implementation. This approach aims to reduce the burden of labor-intensive documentation of drainage events, overcoming a key limitation to project scalability. This initiative involves deploying digital</p>

		water level sensors across sample fields. The study aims to enable the detection of standing water presence and absence in rice fields from space.
NIA Central Office	A representative from the Office of the Administrator requested for the results of quantification of emission reduction conducted by the project for 2024 wet season.	The result of the gas analysis was shared to NIA Central Office and NIA Region 1 via email last February 28, 2025.
Provincial and municipal agricultural officers	During courtesy visits, end-season review and field days, they have expressed support for the project and requested to be regularly informed of ongoing project activities.	Project staff regularly hold in-person meetings with provincial and municipal agricultural officers to provide updates on seasonal activities. These officers are also invited to participate in project events, including field days and selected AWD FS classes.
IA Officers	Who will be attending the AWD FS? Are there any criteria?	Farmers cultivating fields covered by IAs under the NIS of Pangasinan can participate.
	Who will identify and secure venue for the AWD FS?	The IA officers will assist the project staff to secure the venue which maybe a covered court or in the yard of the farmer cooperator for easier access to the demo plot.
	Who will be the cooperating farmers from each clustered IA for the demonstration and learning fields on AWD?	The cooperator shall be the President or to be nominated by the President based on some criteria set by the project staff.
	Some IA officers requested to receive separate training on installation of observation well and filling up of monitoring forms prior to the training of farmers.	Training sessions are conducted for IA officers prior to the conduct of AWD FS.
	Some IA Presidents expressed endorsement of Creattura as the	Project staff expressed gratitude for the positive comment.

	project staff regularly visit them and provide assistance.	(No further action taken.)
	There are concerns on the implementation of GHG measurement whether it will have an impact on the quality of air in the locality as well as the installation of sensors as it might trigger earthquakes.	Project staff clarified that GHG measurement does not impact air quality, as gas samples are only collected for analysis and would otherwise be naturally emitted. They also assured that sensor installation does not cause earthquakes. Prior to installation, consent is obtained from farmers owning or cultivating the land, with a clear explanation of the activities. Moreover, sensor installation was discussed and coordinated with relevant local organizations, including NIA and irrigators associations.
	Providing incentive to both farmers tilling the land and practicing AWD and landowner will make the project attractive.	Participating farmers and landowners will receive portion of profit after successful generation of credits.
Farmers	A farmer inquired whether participation in this project would prevent them from joining other projects with similar goals.	Project staff explained that participating in other projects with similar goals is not possible to avoid double counting of emission reductions.
	Some farmers inquired what would happen if they decided to discontinue their involvement.	Farmer participants are free to discontinue their involvement in the project at any time. However, Creattura hopes that farmers recognize the benefits of the project and choose to continue their participation.
	Some farmers expressed concern about whether they need to seek permission from Creattura if they	Project staff clarified that landowners do not need Creattura's consent to sell, lease, or rent out their farms.

	wish to sell, lease, or rent out their farms.	However, Creattura requests to be informed of any changes in land ownership, as it will need to secure permission from the new landowners to keep the farms included in the project.
	Some farmers inquired whether land titles need to be eligible for incentives.	Creattura will refer to official records of NIA to confirm whether a farmer owns and/or cultivates a specific field. Creattura acknowledges that land title requests involve sensitive information and, as such, will collaborate with NIA for verification.
	Some farmers had the initial impression that irrigation water will not be released when they refuse to join the project.	Project staff, along with NIA staff, clarified that farmers will continue to have access to irrigation water, regardless of whether they participate in the project. The provision of irrigation water remains under the jurisdiction of NIA.
	Some farmers inquired about the meaning of “pangabib” or “risk” in the agreements.	Project staff explained that risk, in the context of the agreement, refers to factors that can affect the value of carbon credits, such as market demand and government regulations. These factors may impact the financial viability of the project and any future incentives that may be provided.

F. References

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- [2] International Rice Research Institute. (n.d.). *Saving Water with Alternate Wetting and*

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- [13] National Irrigation Administration. (2024). *Memorandum Circular No. 35 s. 2024 Guidelines for the Preparation of the National Irrigation Administration (NIA)'s FY 2025 Plan and Budget Proposals (PBPs)*. <https://omcrs.nia.gov.ph/?q=content/mc-2024-035>

Reference lists to support descriptions in the PDD, if any.

Annex			
Table 1: Estimated emission reductions for the period 2031-2034			
Year	Estimated Reference emissions (tCO ₂ e)	Estimated Project Emissions (tCO ₂ e)	Estimated Emission Reductions (tCO ₂ e)
2031	930,292	552,220	359,168
2032	930,292	552,220	359,168
2033	930,292	552,220	359,168
2034	930,292	552,220	359,168
Total (tCO ₂ e)			1,436,672
Table 2: Estimated emission reductions for the period 2025-2034			
Year	Estimated Reference emissions (tCO ₂ e)	Estimated Project Emissions (tCO ₂ e)	Estimated Emission Reductions (tCO ₂ e)
2025	375,708	222,863	145,202
2026	851,600	505,196	329,083
2027	930,292	552,220	359,168
2028	930,292	552,220	359,168
2029	930,292	552,220	359,168
2030	930,292	552,220	359,168
2031	930,292	552,220	359,168
2032	930,292	552,220	359,168
2033	930,292	552,220	359,168
2034	930,292	552,220	359,168
Total (tCO ₂ e)			3,347,629

Revision history of PDD		
Version	Date	Contents revised
1.0	23/06/2025	First version