

NAMA Facility

NAMA Support Project Outline

7th Call

To the Members of the NAMA Facility Board
NAMA Facility - Technical Support Unit (TSU)
E: contact@nama-facility.org

Country:	Sustainable Republic of Totinia
Project Title:	"Towards Carbon-Neutral Totinia Now!"
Applicant:	Think Green and Big LLP

The following documents and annexes are enclosed:

X	General and Specific Information on the NAMA Support Project
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X	Annex 4a: Detailed Project Preparation (DPP) concept Annex 4b: Detailed Budget DPP
X	Annex 5: Business model and financial model (please provide as MS Excel or similar)
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List of abbreviations

BOOT	Build, own, operate and transfer
COP	Conference of the Parties under the UN Framework Convention on Climate Change
COWRIE	National currency of Totinia
DBT	Development Bank of Totinia
DEWS	Department for Energy and Water Services
DPP	Detailed Preparation Phase
DSD	Department for Sustainable Development
FC	Financial Cooperation
FIT	Feed in Tariffs
GCF	Green Climate Fund
GGK	Good Governance is Key – Programme run by the Earth Bank
GHG	Greenhouse gas
GID	General Information Document
LCOE	Levelized Cost of Energy
M&E	Monitoring and Evaluation
NDC	Nationally Determined Contribution
NEWS	National Utility for Electricity and Water Services
NF	NAMA Facility
NFGA	NAMA Facility grant agent
NSO	Nama Support Organisation
NSP	NAMA Support Project
ODA	Official Development Assistance
PPA	Power Purchase Agreement
RE	Renewable energy
SIDS	Small Islands Development States
TC	Technical Cooperation
TGB	Think Green and Big LLP
ToC	Theory of Change
TRE100NOW	Totinia Renewable Energy 100% Now (sector strategy and implementation plan)
TSU	Technical Support Unit of the NAMA Facility
VAT	Value-Added Tax

1 General Information on the NAMA Support Project (NSP)

1.1 NSP data	NSP title	“Towards Carbon Neutral Totinia now!”		
	Country of implementation	Sustainable Republic of Totinia		
	Sector focus (tick one box)	<input type="checkbox"/> Agriculture <input type="checkbox"/> Forestry <input type="checkbox"/> Land use <input type="checkbox"/> Transport	<input type="checkbox"/> Energy efficiency <input checked="" type="checkbox"/> Renewable energy <input type="checkbox"/> Waste/Waste water <input type="checkbox"/> Other	
	Duration of NSP implementation	60 months		
	Duration of Detailed Preparation (DPP)	15 months		
	NSP funding volume requested from the NAMA Facility	Preparation (DPP):	EUR 150,000	
		Implementation:	EUR 24,250,000	
		Total:	EUR 24,400,000	
	Data sharing	Do you agree that information provided in this Outline is shared with selected other funding programmes such as the GCF if this NSP is not selected for support by the NAMA Facility? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
	Publication	Are you willing to have your submission (country, sector) listed on the NAMA Facility website? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Emission reduction credits	NAMA Facility funding is used directly for greenhouse gas mitigation and/or carbon sinks, which will contribute to generating emission allowances, emission credits, or any other type of CO ₂ compensation certificates: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, will the credits be permanently cancelled in an approved register? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
Resubmission	Is your application a resubmission from previous Calls of the NAMA Facility? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
1.2 What is the NSP about?	The NSP supports Totinia to transform its electricity sector by replacing fossil-based power generation capacities with wind, solar and hydro power of at least xxy MW thereby decoupling the country from the use of fossil fuels.			
1.3 What will have changed at the end of the NSP?	The power sector will be transformed as the electricity generation capacities will have shifted away from fossil fuels and towards renewable energy sources. Electricity provision will be largely improved with fewer power outages, enhanced grid stability and less fluctuations in prices. Investment into key assets for a transformed power generation sector of an equivalent of EUR abb m. will be made by NEWS, local and foreign investors as well as banks. The governance and the financial sustainability of NEWS will be improved and at the same time, Totinia’s carbon-neutral pathway will have a positive impact on its marketing potential as a destination for sustainable tourism.			
1.4 National Ministry 1	Name of responsible national ministry	Department for Energy and Water Services		
	Department	Sustainable Infrastructure Group		
	Postal Address	11 Watt Street, 1001 Capitalia, Totinia		
	Contact Person	Theresa Sosindwa		

	Telephone	+007-01234567
	Email	theresa.sosindwa@dews.org.ti
	Website	www.dews.ti
	Letter of Support	<input checked="" type="checkbox"/> Official support letter attached
1.5 National Ministry 2	Name of responsible national ministry	Department for Sustainable Development
	Department	Intergovernmental Task Force for Climate Action
	Postal Address	21 Determination Road, 101 Capitalia, Totinia
	Contact Person	Lucky Vladimi
	Telephone	+007-07654321
	Email	lucky.vladimi@dsd.org.ti
	Website	www.dsd.ti
	Letter of Support	<input checked="" type="checkbox"/> Official support letter attached
1.6 Applicant / Applicant Support Partner	Name of institution	Think Green and Big LLP
	Type of institution	Think Tank based in Oxbridgia
	Legal form	Partnership with Limited Liability and common benefit status
	Non-profit status	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
	Department	Sourcing and Strategizing Cluster
	Postal Address	21 Sunset Path, 202 Oxbridgia
	Country	Totinia
	Contact Person	Name: Destiny Dlamini E-Mail: destiny.dlamini@tgb.org.ti
	Telephone	+007-020202025
	Website	www.tgb.ti
	Role in the project	TGB has been involved in the development of this NSP over the course of the last three years and would be contracted to perform the DPP.
	1.7 Main Implementing Partners	Name of organisation
Type of institution		Financial institution owned by the Ministry of Finance of Totinia with the mandate to promote sustainable development
Country		Totinia
Contact person		Name: Miriam Gold E-Mail: miriam.gold@dbt.ti
Website		www.dbt.ti
Role of Partner in NSP		<i>Contractual party to the NFGA for the implementation of the NSP</i>
Commitment		<input checked="" type="checkbox"/> Official support letter attached
1.8 NAMA Support Organisation (NSO)	DBT (as described above under 1.7)	

2.1 Barrier analysis

Barriers described in this section are those that prevent the electricity generation sector in Totinia from transitioning towards carbon neutrality.

1. Barriers

- a) Limited financial and technical capacities at NEWS to fund, plan for and tender RE generating capacities, operate them and integrate them into the existing grid
- b) Insufficient regulatory framework conditions to operate RE capacities and promote feed-in of electricity to the grid based on PPAs and priority access to the grid
- c) Insufficient private sector capabilities to offer services related to RE generation and feed into the grid
- d) Limited knowledge, trust and track record of financial institutions and local investors to allow investment into RE
- e) No financial incentives to invest in RE capacities including the lack of attractive long-term finance by public and international sources
- f) Non-existence of grid connections between the relevant islands of Totinia

2. Lessons learned from previous activities

a) Previous donor-funded activities have had limited impact only on the capacities of NEWS, as they were not accompanied by investment that would have enabled the NEWS staff trained to make continuous use of their enhanced skill sets. It is thus instrumental to ensure that capacity development goes together with specific investments to make best use of new know-how at NEWS.

b) No transformational national energy planning that is wholly based on RE has been conducted by previous donor-funded activities.

c) A previous project funded by the government of Nordandia has established standards for the feed-in of RE but it has not resulted in improved regulatory framework conditions as NEWS has objected to it. It is of pivotal importance that NEWS is a key player in all future initiatives which - as a point of departure - will be based on the previously amended standards.

d) The market of Totinia has a limited size and past activities to establish local energy service companies have only been partially successful. Future activities will need to ensure the market entry of foreign companies to offer BOOT turn-key projects of attractive sizes and with suitable framework conditions. Trainings for local service staff will probably need to be run abroad as the market size in Totinia is limited so that the establishment of national training schemes would not be economically viable and would most likely also take too long to be established. The training centre for RE in the neighbouring country of Nearania which has been established by donor funding would be best suited to provide such required training.

e) It will be necessary to provide insights from foreign institutional investors and consultants to fully comprehend the financial benefits and risks related to investment in RE on aspects such as transparent tendering processes, secured payment streams and taxation.

f) Previous donor-funded activities have been sporadic in nature and were not based on an overarching government-driven strategy targeting transformational change of the entire power sector. The NSP will ensure that a comprehensive support scheme - including financial advisory services and additional funding sources - is established.

2.2 Project rationale

1. Starting situation

Totinia consists of 21 islands in the central region of the Magnificent Ocean of which four are inhabited. Capitalia is the largest island and has 170,000 inhabitants while the neighbouring islands of Hydroria, Solaria and Ventia host another 21,000 inhabitants combined. The economy of the Totinia is dominated by fisheries, textile manufacturing and a growing tourism industry. The annual growth of Totinia's population is 2 % and the GDP growth is 3 %. With an annual per capita income of EUR 3,200 Totinia belongs to the group of lower-middle income countries.



Totinia experienced a major economic downturn after the world financial crisis of 2007/2008 and reshaped its priorities with the Constitutional Amendment of 2016, in which, among other, sustainability was anchored as an overarching key objective in its constitution and integrated in the country's name which is now the "Sustainable Republic of Totinia". This decision was welcomed by the international community and several support programmes have been launched and continue to operate, most notably the Earth Bank's "Good Governance is Key" programme. GJK has resulted in higher transparency of key public institutions such as the Ministry of Finance and NEWS. Resulting impacts have been the stabilization of Totinia's currency, the COWRIE, and a growing attraction of foreign investment in the tourism and textile sectors.

Totinia, like other Small Island Developing States (SIDS), faces high and volatile power costs resulting from a complete dependency on imported fossil fuels for power generation, related transportation costs and their heavy burden on the country's trade balance and forex reserves. Fuel costs account for 87% of the total power generation costs in 2018. Although fuel prices have declined over the course of the last decade, Totinia's power generation remains expensive and extremely vulnerable to international fuel price fluctuations beyond the control and even predictability of NEWS.

The country's four diesel-fuelled power plants were constructed between 1968 and 1988. Each one suffers from reduced efficiencies, sharply increasing maintenance costs and more and more frequent disruptions. NEWS has an investment plan that would have required the replacement of all four power plants between 1998 and 2018. Due to budget constraints, no replacements have thus far been made. This is causing an increasing number of problems as the demand for electricity has increased been raising of at 3 % per annum over the last 10 years. Key industries such as fisheries and local textile manufacturing as well as the tourism sector are falling behind international competitors due to the increasing costs for electricity and the further damages caused by more and more frequent power cuts.

Totinia's vast potential of RE resources has been thoroughly assessed over the last 15 years with various studies funded by international partner institutions and conducted by international consultancies. This potential remains almost wholly untapped thus far but the sites identified have been included in TRE100NOW.

	<p>2. NSP objectives – what will be different at the end of the NSP</p> <p>(See response under 1.3)</p> <p>In terms of the technical component:</p> <ul style="list-style-type: none"> • Strengthening individual and institutional capacities <ul style="list-style-type: none"> • Primarily of NEWS to run the grid with an ever-increasing share of power generated from RE • At the level of relevant national ministries and other public institutions of Totinia, particularly to strengthen the national MRV system to track CO2 emissions • Of private institutions including potential domestic manufacturers, service providers and local investors who intend to invest in roof-top based solar PV installations • Provision of technical support, including the development of business plans for NEWS and tendering processes required to provide the framework allowing for a complete implementation of TRE100NOW which includes the establishment of an updated energy infrastructure for Totinia (renewable energy plants, storage and grid) • Improving the regulatory framework for private investments to allow for commercially viable feed-in conditions including simplified permitting for solar PV roof-top installations, priority access to the grid, rules on deemed electricity and other relevant aspects <p>In terms of the financial component:</p> <ul style="list-style-type: none"> • Incentives to trigger and leverage private investments and loans by means of large-scale international tenders, a feed-in tariff and support mechanisms for debt provider • Balancing the grid to ultimately run completely on RE sources by interlinking the electricity grids of all four inhabited islands by means of deep-sea cables and the use of batteries in electric vehicles and other batteries to store electricity <p>3. Main target groups and how they benefit from the NSP</p> <ul style="list-style-type: none"> • Government institutions will refine the existing national MRV system • NEWS will profit from support for planning and tendering investment projects and an enhanced know-how to allow for the operation of new RE generation assets as well as the grid under new conditions (RE generation capacities and interconnectedness of all three island grids) • Private domestic investors ranging from institutional investors to commercial entities using their roofs for solar PV installations • Businesses as well as individual clients will profit from more stable and cheaper electricity services
<p>2.3 Project concept incl. business model, financial support mechanism, and capacity building</p>	<p>1. Proposed interventions</p> <p>The currently running diesel generators will be successively replaced by RE generation capacities. The existing generators are by now all outdated but at least the youngest one on Capitalia - which has been operating since 1989 - will be kept as a back-up for balancing and emergency purposes even as energy modelling has shown that the grid could ultimately be run fully on RE sources. RE resource mapping has shown that enough power can be generated from solar PV and wind which would ideally be combined with a hydro power storage plant and the use of e-vehicles to store electricity generated to stabilize the grid and allow for the provision of sufficient reserves for peak loads.</p>

Based on the resource studies established over the last years it is intended to follow the resource plan as included in TRE100NOW which foresees a roll-out of new RE generation capacities as described above and has already defined suitable sites. Thus, three of the four existing diesel-run generators of a combined capacity of xy MW will be replaced by solar PV, wind and hydro power capacities.

As part of the establishment of TRE100NOW, studies have been done to define if geothermal, wave technology or bioenergy project might be better suited to provide the electricity required. Cost and risk aspects have been excluding factors for such alternatives for now, but could re-emerge at a later stage and should not be excluded for now.

International practice has shown that in smaller countries with a limited manufacturing base, it is not efficient to produce equipment locally but that rather large international tenders - when professionally run - can offer higher quality and more attractive prices per kWh.

In the same vein, the NSP proposes not to focus on small scale and localized solutions such as mini-grids and household-based solar PV roof-top installations but to rather concentrate on large scale on-grid solutions which are also better suited for large tenders. Solar PV installations should, given the limited space on the islands of Totinia, as far as possible be based on large commercial buildings. A GIS-based mapping system has identified many such suitable sites on the capitol island of Capitalia and the second-biggest island of Solaria. A substantial number of owners of commercial buildings from both islands have shown interest to install solar PV systems not least for shading and thus insulation purposes. They have a vested self-interest to invest in such installations, as this would make them less dependent on the partly failing electricity services provided by NEWS. Sizeable sites for wind farms in mature stages of permitting processes have already been identified on the neighbouring uninhabited island of Ventia, which would require a 20 km underwater grid connection cable to connect to the closest point of the existing grid on Capitalia. The large surfaces suitable for solar PV sites on Solaria and for wind power plants on Ventia have been secured by DEWS for use and would be the basis for IPP tenders.

Another 50 km away from Capitalia lies Hydroria, the third-most inhabited island of archipelago of Totinia. Its mountainous relief bears a high plateau with a site suitable at its east coast, with high annual rainfalls for a hydro power storage plant with a potential capacity of xy MW. This site has been the subject of a detailed feasibility study and could be constructed over a period of two years. Environmental impact assessments have been conducted and the permitting process for this project is in its final stages.

Preliminary resource planning and grid modelling have shown that a mix of solar and wind generators, together with the storage capacities of the hydro power site of Hydroria combined with the use of batteries from xxyy e-vehicles would provide a solid and stable system to replace the current generators. The neighbouring country of Nearania has gathered substantial experience in a shift towards RE generating capacities which has proven that the geographical conditions of the region, with its solar and wind resources are well suited for the implementation of the NSP.

None of the required RE-specific equipment can be locally manufactured but will be provided by internationally accredited manufacturers from the IPP that wins the respective tenders. However, some products such as mounting structures for solar PV, foundations for wind turbines and piping required for the hydro power project might be covered by local enterprises. The prices are expected to be comparable to those quoted in recent comparable tenders in Nearania which were EUR xx / MWh for solar PV, EUR yy / MWh for wind and EUR zz / MWh for hydro. Job creation will be a factor contributing to the benefits of the NSP, including employment opportunities in the maintenance of solar PV installations. It is expected that the operation and maintenance of the wind turbines will require external support and thus not be contributing to local employment effects.

There is substantial experience from Nearania on fully RE-run electricity generation systems in SIDS which offer ample opportunity for learning and exchange. It is also expected that IPPs working in Nearania will be participating in the tenders, as run as part of the NSP.

One of the national priorities of Totinia is also the provision of RE off-grid electricity solutions for the rural population of Hydroria. It is envisaged that solutions for this part of the population will be provided by support separate from the NSP. Nordandia has declared that it would be keen to provide funding and expertise for such a project, should this NSP be implemented.

Following is a stakeholder map illustrating the technical advisory interventions and the three financial mechanisms, including the relevant institutions and market participants involved:

2. Business model

The tenders for IPPs will cover the following lots:

- Solar PV of xx MW
- Wind of yy MW
- Hydro power site of vv MW

Based on the results of recent tenders run in the region of Emeraudia at comparable sizes and in comparable macroeconomic conditions as those of Totinia, the Levelized Cost of Energy (LCOE) for power generated from solar PV and wind as required in a future blended mix of Totinia are comparable to the LCOE of the current generation mix based on the four antiquated diesel-run power plants of NEWS. However, the comparable recent tenders have all provided a partial remuneration for IPPs in USD rather than in local currencies (such as COWRIE). DBT is willing to provide a comparable guarantee for payments from NEWS to IPPs due in USD under the PPAs. The NSP itself is designed to provide a partial guarantee to DBT for such payments due under which first losses will be covered by DBT up to an amount of USD sss with overshooting amounts to be covered by the funding of the NSP at a level of xx%.

It is thus expected that based on such improved framework conditions for IPPs and enhanced capacities of NEWS in terms of both tendering the capacities and running the grid under changed circumstances no additional cost burden for NEWS would occur. However, the extension of the grid and particularly the underwater grid connection between Ventia and Capitalia require an investment of approx. EUR 28 m. NEWS has a certain amount of capital reserves kept to replace the diesel generation capacities which it would now direct to provide 30 % of the equity for this investment. The remaining 70 % of the investment required could be provided by one of the four main local commercial banks active on Totinia that have all shown interest in such a transaction and would require financial support to be provided by the NSP to allow them to enhance their existing credit lines with NEWS. A competitive process to select one of the financial institutions is intended. An alternative could be a direct investment by the National Pension Fund of Totinia that is seeking long-term, low-risk opportunities for investment in COWRIE with limited return expectations. Negotiations on such a second NSP-funded financial support mechanism shall be concluded as part of the DPP.

Finally, NEWS as supported by TBG and DBT have approached the Pink Climate Fund for support to fund the hydro power project on Hydroria and the additional underwater grid connection which would be required to connect it to Capitalia. The main condition of the Pink Climate Fund to provide both equity and debt for this project was a holistic approach of the government of Totinia to implement TRE100NOW. This condition could be finally met with the implementation of the NSP.

In terms of behavioural change, NEWS is keen to engage in awareness raising activities and change the tariff structure through the introduction of time-of-use tariffs to incentivize both a reduced electricity consumption as well as a more balanced load in the grid. In this context,

the introduction of electric vehicles to use their batteries as an additional means of storing electricity will be promoted.

3. Financial support mechanisms

a) Partial guarantee for partial payments to IPPs in US\$

As described above, the funding for the investment in the RE capacities will be exclusively provided by the IPP. However, the NSP will provide a partial guarantee to DBT to limit its exposure in terms of the guarantee to be provided for partial obligations under the PPAs between NEWS and the IPPs as far as payments in USD are concerned. This financial support mechanism will require approx. up to EUR 11 m. of NAMA Facility implementation funding. The level of its concessionality will be defined by the international market for IPP projects as bidders will be requested to also bid on this criterion.

b) Investment in the grid extensions on Ventia and the underwater grid connection to Capitalia

As described above a subsidy to improve the attractiveness for a local commercial bank to provide a long-term loan of EUR 17 m. to NEWS to trigger its equity investment of EUR 3 m. in the additional grid infrastructure is planned. It still has to be defined as part of the DPP which instrument or mix of instruments might be best suited to fulfil the purpose of attracting both a bank to provide the loan as well as allow NEWS to provide the equity required. Currently, an interest rate subsidy and / or grace periods for payments under the loan in favour of NEWS as well as a partial guarantee in favour of the bank providing the loan are under consideration.

c) Support to the underwater grid connection to Hydroria and reasoning for the funding request beyond EUR 20 m.

A one-time subsidy of EUR 7 m. will trigger the additional investment of the Ministry of Finance into the underwater grid connection to Hydroria and both together will fulfil the condition as raised by the Pink Climate Fund to provide the funding for the hydro power scheme on Hydroria.

It is noted that this project and thus this part of the NSP will only be achieved towards the end of the NSP. Should it not be possible to realize it the overall NSP would be limited in its impacts, as a second of the existing four diesel-run power plants would need to be kept for peak hours. As surface space for suitable wind as well as solar PV sites on Totinia's islands is limited, such capacities cannot be extended at will and beyond what has been defined as part of TRE100NOW.

The government of Totinia holds that the NSP as such would still be compelling even without this part of the project. But to harvest the full benefits of the approach both in terms of the targeted transformation of the whole sector as well as the resulting mitigation impacts it would be highly beneficial to support this part of the project and thus go beyond the NAMA Facility's threshold of EUR 20 m. of funding per NSP.

4. Technical assistance measures

The overarching aim of the technical component is to fulfil the conditions for the implementation of TRE100NOW in terms of the establishment of an updated energy infrastructure for Totinia.

The first pillar of technical interventions relates to the preparation and the tender for RE generators to be added to the Totinian grid as well as the grid extensions required due to the

connection of the wind farms as part of a new grid on Ventia and the underwater cable to connect it to Capitalia.

The second pillar is to reinforce the capacities of NEWS to operate the national grid under the conditions of a successively increasing share of RE generators. Study tours of technical staff of NEWS will be organized as well as trainings and on-site mentoring by experienced staff from the utility of Nearania and the training centre located there. The availability of expertise from Nearania is seen as a great asset as it will remain available even after the end of the NSP.

Thirdly, to allow for RE generators to be successfully tendered, all required feasibility studies, permits and regulatory framework conditions that are already partly in place will be refined to allow for a high interest of international IPPs to bid on the tenders for RE capacities to be installed as well as the grid connections to be put in place.

Finally, the regulatory framework conditions for private investments will be improved and private institutions - including potential domestic manufacturers, service providers and investors - will be attracted by awareness raising activities. The National Pension Fund of Totinia has already shown interest to invest in RE capacities as it will provide the opportunity for investment in COWRIE, the national currency. The Ministry of Finance is in the final stages of defining tax benefits and investment guarantees for foreign IPPs and investors.

A proper timing and sequencing of all intended activities will be key to ensure the success of the NSP, as some results (particularly the tenders) will need to be achieved early on while others (for example the training of NEWS staff) will not be required right at the start. The alignment between the technical activities and the establishment of the financial support mechanism will be the main priority of the planning horizons.

The financial sensitive analysis done so far (that would be further refined as part of the DPP) has indicated that the LCOE as the main indicator for the financial attractiveness of the transformation for NEWS will be slightly higher based on the support mechanisms as proposed by the NSP. The difference could be covered by increasing revenues from more satisfied electricity users as well as by further declining investment costs for RE technologies. Related calculations will be undertaken as part of further refined business modelling to be conducted as part of the DPP.

5. Use of undrawn NSP funding after the term of the NSP

It is expected that not all funding earmarked by the NSP might be fully used at the end of the NSP as the guarantees for IPP payments will not be fully drawn. It is the aim of the government of Totinia as expressed by DSD and DEWS as the custodians of the NSP and fully in line with TRE100NOW to use such remaining funds to increase the access of electricity of the rural populations in terms of the project to be funded by Nordandia.

6. Key milestones during the NSP implementation

Year 1:

- Update and reconfirmation of TRE100NOW concerning capacities and site selection
- Totinia's MRV system to track emissions is refined and in use
- Financial mechanism for IPP support is in place
- 1st IPP tender on solar PV and contracting of selected IPPs by NEWS
- General public is informed, and awareness raised for introduction of time-of-use-tariffs

Year 2:

- Based on the targets of the NSP now in implementation, Totinia passes and presents its updated NDC setting an impressive example of an enhanced NDC to set more ambitious mitigation targets

	<ul style="list-style-type: none"> - Construction of solar PV plants on Solaria and connection to the existing grid - Oldest of the four existing diesel-run generators is taken out of use - Financial mechanism for Ventia project is in place - Tender on grid extension / connection for Ventia - 2nd IPP tender on wind power and contracting of selected IPPs by NEWS - Tender and contracting on the Hydroria project - Training of NEWS staff starts - Introduction of new meters and time-of-use tariffs is piloted <p>Year 3:</p> <ul style="list-style-type: none"> - Construction of the underwater cables to Ventia - Construction of the wind farms on Ventia and connection to the enhanced grid - Second oldest of the four diesel-run generators is taken out of use - Construction of the hydro power scheme starts - Training of NEWS staff continues - Introduction of new meters and time-of-use tariffs is rolled out more broadly <p>Year 4:</p> <ul style="list-style-type: none"> - Construction of the underwater cable to Hydroria - Training of NEWS staff is completed - Introduction of new meters and time-of-use tariffs is complete - Phase-out concept for the NSP is drafted and agreed with the NAMA Facility <p>Year 5:</p> <ul style="list-style-type: none"> - Construction of the hydro power scheme is finished - Connection of the hydro power scheme to the grid - Third oldest of the four existing diesel-run generators is taken out of use - Totinia electricity-generation system is transformed and running fully on RE sources - Collection of lessons learned and dissemination with neighbouring countries - Phase-out concept for the NSP is implemented
<p>2.4 Embedding</p>	<p>1. National climate policy context and sector relevance</p> <p>Totinia is a party to the UNFCCC and has submitted its NDC under the Paris Agreement in June 2017. Although the NDC primarily focuses on aspects of adaptation - as Totinia is already suffering from the effects of the human-made climate crisis such as increased flooding, raising sea level and changing rain patterns - mitigation has also been addressed: Totinia has set itself the goal to reduce its mitigation to <i>xc</i> % by 2030. Currently, 75 % of Totinia’s CO2 emissions are the result of the power sector, while an additional 10 % stem from land-based transport. Yet alone the NSP would thus have the potential to overfulfill the already comparably ambitious reduction targets as currently set. The President of Totinia has stated in his endorsement letter that the prospect to implement the project as described with this NSP would constitute the basis to update an enhanced and substantially increased NDC.</p> <p>2. Sector policy and relevance for sustainable development co-benefits</p> <p>The amendment of the Constitution in 2016 which has renamed the country as “Sustainable Republic of Totiania” has been the point of departure for a comprehensive and detailed approach on various matters of sustainability, most notably the development of a strategy for the power sector. The detailed sector strategy and implementation plan named “Totinia Renewable Energy 100% Now” of 2018 has set the foundation for this NSP: The national priority to gain independence from diesel imports has been proclaimed and the process to identify an alternative and feasible pathway been defined.</p> <p>The implementation of the NSP will not only decouple the development of Totiana from highly fluctuating international diesel prices and liberate it from onerous transport costs, but it will also open up investment opportunities for both local as well as international banks and investors. The successful implementation of the NSP will be a showcase for the starkly improved governance of Totinia’s public entities and their transparent tenders and thus</p>

attract additional international investment into the country. Mid to long term investment opportunities in COWRIE are key for some Totinian public funds and commercial banks would profit from higher financial engagement in the country.

Moreover, the stabilization of power supply and more professional power services will have positive effects on all industries suffering from outages, mainly the textile and the tourism industries. Macro-economic benefits, which have been estimated to be as high as 5 % of Totinia's annual GDP, could be achieved and if ensured would lead to increased tax income for the country.

In addition, the NSP will contribute to making Totinia more resilient against adverse climate change as electricity will in future be more substantially available and used to desalinate saltwater for human use. Totinia is increasingly suffering from changing rain patterns and less annual precipitation and its freshwater storage capacities in the form of lakes could be filled whenever excess electricity from RE would be available. This additional use of electricity could - in addition or alternatively to the hydro power pumping project - have a balancing effect on the grid and generate additional income for NEWS.

Finally, Totinia's reputation as a sustainable country which will as a result of the NSP have achieved an unprecedented reduction of CO2 emissions compared to any other country in the world would contribute to its endeavours to market it as a sustainable tourism destination. The following technical and financial feasibility studies combined with the participatory process to identify suitable sites for RE generation have been successfully accomplished.

3. Related initiatives, programmes and projects

As mentioned above, the Earth Bank's GKG has been a source of inspiration for a lot of initiatives to improve governance at Totinia's public institutions and are a key basis for the ability to target tendering schemes.

The NSP also builds on past and present activities of other donor-funded projects, notably from Nordandia. As mentioned above, some of the lessons learned will be integrated into the NSP and synergies with the ongoing activities in terms of rural electrification are to be ensured. This rural electrification scheme, an important aspect of the social and political agenda in Totinia, also features prominently in the NSP as the possible target for phase-out / post-NSP activities.

More importantly, the collaboration with the Pink Climate Fund is a main condition for the success of the third financial mechanism proposed by the NSP and the overarching aim to achieve a power sector on Totinia's that is freed from carbon emissions. Only both instruments together will be able to achieve this decisive part of the project and it will serve as a good example and blueprint for working together in further countries.

Lastly, the NSP will be profiting from and providing business to the training centre for RE in the neighbouring country of Nearania, which would be a win-win situation for both.

4. Justification of the NSP and additionality

A lot of preparatory work has already been achieved in Totinia in order to set the scene for the transformation of the country's power sector. Several key players are ready to take responsibility and the NSP would get implemented at a crucial moment in time to trigger the transformational.

Without this support, the project of Hydroria would not be happening, as no other suitable funding source is in sight to provide the support required by the Pink Climate Fund is in sight.

More dramatically, without the upgrade and reinforcement of the grid to also connect Ventia to Totinia's power grid, which as of now only connects Capitalia, with Solaria only limited

	<p>amounts of solar PV capacities could be established, given the limited space available on the islands. Thus, without the NSP there is a risk that the government would need to revert to quick fixes to resolve power shortages, should any of the four existing aged diesel-run generators fail. Such further investment in new fossil-based generation capacities would create undesired consequences for years (if not decades) to come and it is hoped that such a situation can be prevented. However, the longer the transfer to RE is not achieved, the higher the risk that one of the aged diesel-run generators drops out.</p>
<h3>3 NSP Ambition</h3>	
<h4>3.1 Potential for transformational change</h4>	<p>The NSP will result in improved framework conditions and financial incentives to trigger investment thus rapidly transforming the power generation sector on Totinia as the main source of CO2 emissions from a system fully based on fossil fuels to a 100 % share of RE (see also remarks under 1.2 and 1.3).</p> <p>The investment into RE capacities will reverse the flow of funds from mainly public investment to replace existing diesel generators to mainly private investment into RE. The incentives provided by the NSP will encourage and fast track this development. Based on TRE100NOW and the resulting changed framework conditions, a turn back to previous climate-unfriendly patterns will be excluded. At the same time, with diesel generators fading out over time and one remaining as a back-up at the end of the transformation, the NSP is based on assumptions conservative enough to ensure a continued safe supply of electricity.</p> <p>With its measures to raise the awareness of electricity consumers to use electricity more efficiently the NSP also engages with aspects of behavioural change at the demand side to decouple GDP growth from raising electricity demand.</p>
<h4>3.2 Financial ambition</h4>	<p>1. Reduction/removal of barriers for investments into GHG mitigation activities</p> <p>Based on the activities on GGK, there is already a growing level of trust of both local and international investors in the good governance of the public sector of Totinia and notably in the capacities of NEWS. The thus improved investment climate will be further reinforced by capacity-building measures of the NSP at NEWS and lessons to be drawn from previously run RE tenders in the Emeraudia archipelago with comparable framework conditions. Based on these activities and the incentives as set by the guarantee mechanism supported by the NSP it is highly likely that potential IPPs will participate in the upcoming tenders on RE capacities for solar PV, wind and hydro power to be run as BOOT schemes. This would constitute a landmark change in investment patterns in Totinia in terms of drawing on private capital from both local and international sources.</p> <p>2. Financial contribution from the private sector</p> <p>Private investment to establish solar PV, wind and hydro power installations is estimated to add up to EUR 72 m. and dependant on the result of the competitive IPP tenders and underlying world market prices at the time of tendering, macro-economic conditions of Totinia and other financial factors. IPPs would account for all investment capital required and structure their investment to include debt instruments and possibly local funding sources such as the National Pension Fund, also tapping into local banks.</p> <p>3. Financial contribution from the public sector</p> <p>The government of Totinia would basically be matching the required NSP funding with an overall contribution of EUR 24,000,000.</p> <p>It would mainly be covering cost portions related to grid extensions on Ventia and the underwater grid connections to Solaria and Hydroria.</p>

	<p>Limited reserves at NEWS amounting to currently EUR 7 m. which have been accrued to invest into the replacement of the aged diesel generators will be redirected and further financial means provided by the Ministry of Finance availed.</p> <p>This commitment and investment of the government of Totinia as included in TRE100NOW and reconfirmed in the endorsement letters presents the single-biggest public investment ever in Totinia as the centre piece of its endeavours to become sustainable and self-sufficient.</p> <p>4. Financial contribution from the donors</p> <p>The investment into the hydro power pumping scheme on Hydroria will be based on a contribution of EUR 40,000,000 by the Pink Climate Fund. This project is in advanced stages of technical and financial feasibility studies and potential investors for a BOOT scheme have been identified. As the Pink Climate Fund is requiring a contribution by other funders to establish the underwater electricity connection from Capitalia to Hydroria and the government of Totinia has been able to earmark funding of EUR 13 m. only so far the subsidy of the NSP to fill the remaining gap of EUR 7 m. is crucial to ensure the realization of this project and will thus trigger an overall additional investment of EUR 73 m.</p>
<p>3.3 Mitigation ambition</p>	<p>1. Direct mitigation potential</p> <p>The electricity market of Totinia currently consists of three distinct systems (Capitalia with Solaria connected), Ventia (isolated grid) and Hydroria (currently only several isolated mini-grids) with a combined installed capacity of xy MW. The following Chart 1 summarises the available effective capacities, fuel consumption and load profiles of these systems.</p> <p>In 2019, 98 % of electricity was generated from the four diesel generators fuelled with light fuel oil and heavy fuel oil, while the share of RE was minor.</p> <p>The NSP will promote RE and reduce the demand for diesel up to a neglectable minimum. Emission reductions will kick in at the 2nd year of NSP implementation once the first solar PV installations on Capitalia and Solaria get on-grid, increase with the start of operations of the wind farms on Ventia and their connection to the main grid with the new underwater connection and peak with the electricity connection to Hydroria and the related start of operations of its hydro power pumping scheme.</p> <p>The mitigation potential of the NSP is estimated according to UNFCCC best practice with a baseline and project emission scenario as per the CDM Grid Emission Factor Tool16 and Methodology AMS-I.D17. The current national average emission factor for the grid of Totinia is estimated to v.sd tCO₂/MWh. In total, the emissions from power generation represent about 90% of all domestic emissions in Totinia.</p> <p>Totinia’s current CO₂ emissions from power generation sum up to xxx,yyy tCO₂/a. If the annual electricity production would increase in line with current GDP growth rates of 3% the total annual baseline emissions would increase to yyy,xxx tCO₂ in 2025, yxy,xyx tCO₂ in 2030 and xyx,xxx tCO₂ in 2035 as illustrated in Chart 2.</p> <p>It is assumed that based on the NSP a 100% share of RE is reached 4 years after the end of the NSP implementation. Underpinning this assumption are rapidly increasing emission reductions from year 2 of the NSP implementation onwards to reach ddd,yyy tCO₂ in year 2, dff,fff tCO₂ in year 3, eee,fgf tCO₂ in year 4 and ggg,ghg tCO₂ at the end of the 5th year of the implementation period of the NSP as displayed in the following Chart 3.</p> <p>Within the duration of the NSP the cumulative mitigation amounts to hhh,hjh tCO₂. Thereafter, for the following 4 years, slightly increasing annual mitigation of III,klI tCO₂ is</p>

projected. Once a 100 % share of RE is reached 4 years after the end of the NSP, an annual mitigation of *kkk,klk* tCO would accumulate, with overall mitigation of *pop,ppp* tCO₂ until 20xy.

In addition, the raising of awareness of electricity consumers and the introduction of new tariff structures will lead to an increased level of energy efficiency which has been estimated to accrue to *xyx* MWh/a from year 3 of the NSP onwards. The ambition of the government of Totinia is to not only decouple electricity generation from fossil fuels but to also decouple GDP growth from electricity demand: Thus, the future power mix fully reliant on RE would still be able to attend to the demand of electricity, even with over time reducing electricity generation capacities, for example because of decreasing electricity yields from solar PV. [Chart 4](#) summarizes the projected development of electricity supply and demand based on the implementation of TRE100NOW including the NSP over the next 20 years.

2. Indirect mitigation potential

In terms of indirect mitigation potential, the NSP will over time also result in the substitution of gasoline and diesel used for road transportation as electric vehicles will become more prominent. This aspect is covered by TRE100NOW but goes beyond the scope of interventions of this NSP and will be pursued separately by the government of Totinia. A recent study mandated by the Ministry of Transport has quantified the potential to suppress demand of fuels on the basis of the enhanced electricity generation capacities ensured by the NSP to amount to *dxd* litres per year which would present a mitigation of *fgf* t CO₂.

In its NDC of 2017 Totinia has committed to a reduction of *xc* % on its BAU GHG levels by 2030, which translates to GHG emissions reductions of *r.t* Mt CO₂ eq per annum in 2030. Yet alone the direct mitigation ensured by the NSP as described above would already go far beyond this commitment, overfulfilling it by *xs* % at the end of the NSP implementation.

At this place, the summary table from Annex 6 would need to be copied in.

4 Expected Budget and Financing Structure of NSP Implementation Phase (in EUR)

Overall cost and financing contributions for the Implementation Phase (Estimate)

NSP - Implementation	Total cost	Nama Facility	National budget	private sector	other donors	total finance
1. Financial mechanism(s)						
1.1 IPP partial risk guarantee	47,500,000	11,000,000	1,500,000	35,000,000		47,500,000
1.2 Connection Ventia	28,000,000	3,000,000	8,000,000	17,000,000		28,000,000
1.3 Hydroria	80,000,000	7,000,000	13,000,000	20,000,000	40,000,000	80,000,000
2. TA (Expert services / consulting)	5,500,000	3,500,000	1,500,000		500,000	5,500,000
3. Other direct and indirect costs	750,000	750,000				750,000
Total <gross>	161,750,000	24,250,000	24,000,000	72,000,000	40,500,000	161,750,000

Please provide an explanation on how secured the different funding sources are:

- National Budget: see endorsement letters by the Ministry of Finance, DBT and NEWS
- Private sector: see interest letters from commercial banks and Totinia Pension Fund
- Other donors: see letters from the Pink Climate Fund and the government of Nordandia