

## Fact Sheet

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**Title of the proposed Joint Programme** Solar Revolution for Transforming Lives through National Solar Fund Scheme

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**UNCT** Sudan

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**Date** Tue, 03/31/2020 - 12:00

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**RCO focal point** Chikako Kodama

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### Lead UN entity and contact person

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UN entity	Name	Email
United Nations Development Programme (UNDP)	Selva Ramachandran	selva.ramachandran@undp.org

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### Participating UN entities and contact persons

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UN entity	Name	Email
United Nations Children's Fund (UNICEF)	Kannan Nader	knadar@unicef.org
Office of the United Nations High Commissioner for Refugees (UNHCR)	Abdelrahman Elamin	abdalgad@unhcr.org

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### Relevant UNDAF Outcome/s and Output/s

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- UNDAF outcome 2: By 2021, people's resilience to consequences of climate change, environmental stresses and natural hazards is enhanced through strengthened institutions, policies, plans and programmes
- UNDAF output 2.1: Targeted populations are better equipped to withstand climatic shocks, natural disasters and environmental degradation

### Relevant objective/s from national strategic document/s

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- Sudan's Twenty-Five Year National Strategy, 2007–31
- Renewable Energy Master Plan, 2005
- National Agriculture Investment Plan, 2016–20
- National Adaptation Programme and Action, 2007
- National Adaptation Plan, 2014
- National Communications Report 2013 and Third National Communication and Biennial Updated Report 2020
- Intended National Determined Contribution Report, 2015
- Sudan SDG-6 Plan

**SDG targets on which the progress will be accelerated (includes targets from a range of SDGs and development pillars)**

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**Goal 1: End Poverty** 1.4

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**Goal 2: Zero Hunger**

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**Goal 3: Good Health and Well-Being** 3.2

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**Goal 4: Quality Education** 4.1

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**Goal 5: Gender Equality** 5.5

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**Goal 6: Clean Water and Sanitation** 6.1

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**Goal 7: Affordable and Clean Energy** 7.2

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**Goal 8: Decent Work and Economic Growth**

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**Goal 9: Industry, Innovation and Infrastructure**

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**Goal 10: Reduced Inequalities**

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**Goal 11: Sustainable Cities and Communities**

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**Goal 12: Responsible Production and Consumption**

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**Goal 13: Climate Action** 13.2

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**Goal 14: Life Below Water**

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Goal 15: Life On Land

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Goal 16: Peace, Justice and Strong Institutions

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Goal 17: Partnerships for the Goals 17.1

## Self-Assessment

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The proposal reflects the integrated nature of the SDGs Yes

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The proposal is based on an inter-agency approach (two or more UN entities involved), with RC coordinating Joint Programme preparation and implementation Yes

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The proposed results are part of the UNDAF and aligned with national SDG priorities Yes

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The proposed Joint Programme will be led by government and include key national stakeholders Yes

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The proposal is based on country level consultations, as explained in the Concept note, and endorsed by the government (the letter of endorsement) Yes

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The proposal is based on the standard template for Concept Notes, it is complete, and it includes: Yes

- Theory of Change demonstrating contribution to SDG acceleration and transformation to implement the 2030 Agenda and awareness of relevant financial policy efforts at regional or national level,
  - Results-oriented partnerships, including a strategy to engage and partner with IFIs/MDBs,
  - “Quick wins” and substantive outcome-level results, and
  - Initial risk assessment and mitigation measures.
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The proposal is expected to leverage resources for the SDGs at scale Yes

## Proposal for Joint Programme

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## 1. Summary of the Joint Programme

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About 20 million people lack access to electricity in Sudan, impacting education, health, livelihoods, agriculture and development. 65% of Sudanese populations live in rural areas have no access to electricity. For those with a connection, power outages are common, and connectivity is unreliable.

Hydropower is Sudan's largest power generation source, comprising 65%, with 34% generated by fossil fuels. The expansion of hydropower to meet future demand is limited, and there exists an urgency to diversify sources of power generation such solar resources. This diversification requirement is matched by a parallel need to reduce dependence on increasingly costly imported fossil fuel. The rising cost of energy subsidies have led to significant Government budgetary deficits, fueling significant and damaging inflation. The Government can't implement fuel subsidy reform without first weaning agricultural and other rural energy services sectors off fossil fuels.

Through solar energy, the JP will address multiple needs of the communities such as: agriculture & livelihood, lighting in households, learning, health services and access to safe drinking water, reduce conflicts between different tribes and enhancing peaceful co-existence between refugees and the hosting communities which will contribute in peace building and accelerate private sector investment. The JP will deliver these activities by using an innovative finance mechanism – a National Solar Fund – to significantly increase the availability and utilization of solar systems, particularly at the community and rural level. It will introduce and/or increase solar electrification for basic needs, live saving, security and economic growth.

The National Solar Fund will support and ensure cost-reduction on solar systems, and support for innovative business models. Lower costs will result in solar systems becoming more financially viable, commercial capital flows increasing, and end-users benefiting from lower tariffs.

Supporting these aims, the JP will provide financial and technical assistance for: i) policy and regulation for entrepreneurs to invest in solar business; ii) strengthening capacity of end-users and promoting private sector engagement in the solar revolution programme; iii) facilitating and supporting the National Solar Fund.

With the support of JP, about 34,000 green jobs will be created in the agriculture sector for the whole year, 300,000 people improve access to electricity for drinking water including rural health care centers, 6,000 people access to electricity associated with private sector involvement and saved direct CO2 emission reduction of 19,856,000 tons. Finally, reduced dependency on imported fuel – saving USD\$ 2.5 million annually in subsidy expense for the Government.

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## 2. Thesis and theory of change of the Joint Programme

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The JP seeks to transform access to electricity from fossil fuel to solar energy with affordable rate in two States, with the involvement of private sector investment and ultimately, within Sudan and beyond. The JP rests specifically on certain assumptions about the present and about what is likely to happen in the future. These assumptions are:

a. Water pumping is necessary for drinking water and irrigation which is in-turn essential for the basic needs and agriculture on which the targeted beneficiaries depend

- b. Lighting is essential for learning and live saving in schools and rural health care centers which is in-turn improving knowledge, security and peace for targeted beneficiaries depend
- c. Small scale cottage industries are essential for job creation and daily income which is in-turn necessary for the economic growth on which the targeted beneficiaries depend
- d. The presently common method of water pump, lighting and small-scale cottage industry in rural area are by using diesel power engine because the cost of diesel as an energy source is artificially low because of Government subsidies and can be expected to lift subsidies in near future
- e. The use of solar energy as an alternative to source of energy to diesel provides several advantages, such as reduced maintenance, increased reliability and reduced effort and hassle from the users

Despite the above, solar energy has not been widely adopted due to it is relatively new technology and performance is unknown, hence, inherently risky and the capital investment required for solar systems as well as limited players in the market.

The theory of change of the proposed project is that “if the risks faced by private investors are effectively reduced, eliminated or transferred by de-risking instruments as well as building capacity of operation and maintenance on end users then the investor’s cost of capital will be reduced with the dual beneficial effects of increasing private investments in solar water pumps for small scale irrigation, drinking water and mini-grids for income generation, lighting and ultimately increasing the affordability of solar energy. Through increased private investments in mentioned activities, communities who would not have had access to electricity in the baseline scenario would now be electrified with solar energy and at an affordable price. In addition, reducing financing costs, emphasis will be given to hardware and soft component cost reductions, all of which will act in synergy to decrease the cost of solar energy in rural settings. The project will operationalize innovative business models – National Solar Fund Scheme – centered on productive energy uses, implying improved economic opportunities in terms of income generating activities for local communities. The combined effects of decreasing electricity costs and improved economic conditions will be the increased affordability of solar energy for end users and transform the livelihoods.

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### **3. What are the expected results of the proposed Joint Programme?**

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The JP is aligned with UNDAF 2018-21 outcome 2 where “by 2021, people’s resilience to consequences of climate change, environmental stresses and natural hazards is enhanced through strengthened institutions, policies, plans and programmes”. The JP will support 500 solar pumps (5.12 kWP) for small scaled irrigation in farmland, 50 solar pumps (20 kWP) for drinking water, 50 solar facilities for rural health care center (10 to 20 kWP) and 10 solar minigrids (100 kWp) for agro-processing, lighting for households and IDP camps.

The overall objective of the JP is “access to clean energy by increasing the financial viability and promoting scaled-up commercial investment in solar facilities”. The JP will measure i) number of households benefitting from clean, affordable and sustainable energy access; ii) direct CO2 emission reductions and iii) number of direct beneficiaries disaggregated by gender.

Outcome 1: Enabling policies and regulations are in place that address policy, institutional, regulatory and technical barriers to facilitate investment in solar facilities. The JP will measure i) number of De-risking Renewable Energy Investment analyses and identify cost effective instruments and included in policies and ii) completed solar ATLAS for all regions and included in Rural Electrification Strategy

and Action Plan

Outcome 2: Strengthening capacity of end-users and promoting private sector engagement in the solar revolution programme. The JP will measure i) number of solar facilities developed by installed capacity kWp; ii) number of organizations with enhanced technical capacity to develop procurement processes with cost reduction; iii) numbers of trained people for O&M – gender disaggregated and iv) number of technical guidelines for solar facilities

Outcome 3: Strengthened innovative financing mechanism – National Solar Fund – and accompanying financial instruments in place to incentivize investments in the development of solar facilities. The JP will measure i) NSF scheme strengthened and operationalized and ii) number of market intelligence reports completed

The proposed NSF will make available deposited funds to farmers and other eligible candidates through loans. It will be overseen by a committee comprising concerned ministries, banks and donors. The Fund will be administered by a Bank Consortium and access resources from a range of domestic and foreign entities. Sudan's Federal and State governments are willing to invest setup funds for the NSF and provide guarantee letter for the banks. The JP fund will use as seed funding and install solar facilities and then the farmers will repay the fund to the NSF with affordable interest rate.

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#### **4. Describe the innovative nature of the Joint Programme**

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The JP concept is based on the success case of the Solar for Agriculture project which is funded by 5M\$ from GEF, it has catalyzed foreign investment of another USD 9 million, plus domestic investment of USD 17.9 million from commercial banks. Sudan is bringing now the concept of the solar irrigation fund a step further, to establish a "National Solar Fund". The NSF has already attracted further public investment from Korean Organization for International Cooperation (KOICA), contributing with USD 7 million, aiming at replicating the Fund structure and methodology into River Nile State. With the support of SDG Fund, the NSF will expand in social sector such as lighting for school education (including e-learning for out-of-school children), rural health care centers, agro-processing and IDP camps. This will be in the form of an integrated package of multi-sectoral interventions addressing the challenges of agriculture & livelihood, lighting, learning and access to water and health services simultaneously, thereby paving the way for an accelerated development of the community.

As explained in section 3, the NSF is an excellent example of innovative climate finance, which is crucial for the achievement of Sudan's NDC's and the global SDG's. Firstly, it encompasses a solid structure for public and private partnership, that can now join efforts on the implementation of the development agenda in Sudan. The Fund also creates an enabling environment needed to scale-up climate actions, a proved mechanism for catalyzing initial public investment into large private investment.

Secondly, the origin of such investment is not limited to the country of Sudan, but aiming at cross-sector blended finance, from domestic and global sources. The solar for irrigation, drinking water, lighting in schools, health centers and agro-processing business initiative embodies a groundbreaking mechanism for rural access to such global finance. The NSF scheme is directly targeting vulnerable people, an action that indeed can unlock economic growth in agriculture, improving access to electricity in social sector.

Thirdly, this financial model presents a highly innovative approach to vertical implementation, connecting the interests of national and

regional authorities while contributing to global obligations of Sudan. In this sense, top-down policies translate into bottom-up actions, with individual beneficiaries and families playing a leading role in the incorporation of climate activities. The Fund is a successful financial mechanism to deal with climate change induced drought disasters and adjusting to post-crisis recovery challenges.

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## **5. Expected added value of the UN and the Joint SDG Fund**

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The SDG Fund will use as “seed funding” for National Solar Fund scheme which will provide critical funding for the key activities and intended outcomes of the Project.

The JP will provide sustainable clean energy solutions to agriculture, schools (including e-learning centers), health centers, water yards (drinking water) and other community-based infrastructure to achieve Sustainable Development objectives. The JP will build on, among other platforms, UNDP’s Africa Mini-grid Program, UNDP’s Climate Aggregation Platform, UNICEF’s expertise in the areas of education, health & nutrition and WASH; and UNHCR’s operational presence and support to a wide variety of social infrastructure in refugee areas. The JP anticipates that the harmonized approaches involved in project activities will produce new methods and approaches to promoting and supporting solar revolution in country and within the agencies’ programming, as well as new partnerships with the private sector that could encourage efforts towards accelerated progress on the SDGs in this area and related areas of work (e.g., agriculture, water, health, education, livelihoods, etc.).

By using of NSF scheme, the JP will attract other external financial sources, such commercial banks, Ministry of Finance, Federal and State Government, private companies, vertical fund, bilateral donors and communities. The JP will create a market for solarization, saving CO2 and enhancing green jobs for youth and women.

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## **6. Leadership and implementation of the Joint Programme**

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The JP will take a lead role by UNDP, UNICEF and UNHCR in close collaboration with the UN Country Team and the RCO. The Renewable Energy Department from Ministry of Energy and Mining and National Energy Research Center will play key role for technical design and coordination among the other Ministries. Ministry of Irrigation & Water Resources, Education and Health will support for required assistance and Ministry of Finance will provide tax exemption for solar materials and local component contribution for the JP. In addition, the JP will coordinate with the international and national investment communities (i.e. commercial banks, private companies) and attract to expand the fund.

Significant capacity exists within the UN development system in the area of green energy, that sits at the country, regional and global level. This JP will enable this capacity to come together and transfer to the investors and beneficiaries. It may be that additional capacity is needed, particularly in the area of financial structuring for example how to strengthen National Solar Fund structure and financing mechanism. The World Bank is already a close partner in this work and so this partnership can be further leveraged. There are also a considerable number of external partners involved in this effort who can be further utilized as required.

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## **7. Expected period of implementation**

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The Project Period is for 36 months. This may include an inception period to take place at the start of the project, to allow for recruitment and further development of a fully-harmonized technical assistance and coordination at country level, as well as to set up the

legal/financial structure of the Fund.

Proposed Milestones:

- a. Inception meeting which will take place as soon as signed by the Government and UN agencies
  - b. Inter-agency MOU
  - c. Creation of multi-agency work plan and governance structure
  - d. Recruitment of Technical staff
  - e. Baseline survey (designing, identification and selection process of farmers and potential investors)
  - f. Legal and/or regulations of the NSF
  - g. Launch of solar financing offered by the Fund (procurement, installation)
  - h. Impact Study
  - i. Terminal Evaluation
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## **8. Cost, co-funding, and co-financing of Joint Programme**

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The JP will support 500 solar pumps for small scaled irrigation in farmland, 50 solar pumps for drinking water, 50 solar facilities for rural health care center and 10 solar minigrids for agro-processing, lighting for households and IDP camps.

According to the NSF scheme, the farmers or investors will repay the fund to the NSF with affordable interest rate. Based on the past feasibility studies and pilot project evaluation reports demonstrate feasibility of repayment by farmers on loans via the Fund. The NSF would need replenishment on an annual basis while fuel subsidies are continued. Once fuel subsidies are completely removed, the entire Fund can be turned into a revolving fund with an initial endowment to be agreed upon. The income obtained from the endowment would assist in covering the cost of the support structure for the Fund, while the principal amount would continue to revolve and manage by bank consortium group which will increase efficiency and effective of the scheme.

The JP will strengthen NSF scheme and access resources from a range of domestic and foreign entities approximately USD 15.55 million. The co-financing amount stands for 168% of requested amount from the SDG Fund (USD 9.245 million). The potential co-financiers are as follow:

- Ministry of Energy and Mining: USD 1 million for in-kind contribution (i.e. staff salary)
- Ministry of Agriculture – State: USD 1 M\$ for in-kind contribution (i.e. staff salary, premise for office and furniture)
- Ministry of Irrigation and Water Resources and Irrigation: USD 0.5 million (in kind)
- Agriculture Research Center: USD 0.5 million (in kind)
- The Federal Ministry of Finance: USD 3 million for tax exemption and local component contribution
- State governments: USD 1.5 million
- Sudan's banking sector: USD 7 million for loan basic
- UNDP: USD 0.35 million for cash contribution
- UNICEF: USD 0.35 million for cash contribution
- UNHCR: USD 0.35 million for cash contribution

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## 9. Risk assessment

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The political and security risk: the situation in Sudan may pose some risks or perceived risks. Without general security, the ability to travel, transport goods and work will be restricted. With renewable energy equipment, where the entire capital is procured and installed upfront, theft or damage can mean a complete loss of invested capital. The project team will identify the sites in consultation with farmers including Ministry and install the solar facilities.

Financial Risk: The capital required remains significant for the solar facilities. The interest rates typically charged by the banks are too high to make solar activities to invest viable at village level. The project will work closely with the banks to provide the confidence they need to lend and with Government and the Bank of Sudan to achieve affordable finance rates and make the investment in solar facilities attractive for farmers and other groups. In this regard, solar water pumps, mini-grids are able to pay back with affordable interest rate to the NSF but school and health facilities have high risks on non-payment by users of the provided solar energy. Without the Joint Programme this risk would make the provision of solar energy too high and the schools and health centers would remain without energy. The effort to reduce this risk includes the use of UN operations and programmes as a reliable partner, the technical preparation work of UN technical experts in bundling the projects and the de-risking resources in the financing facility. The sustainability of the

project is dependent on the quality of the analysis that goes into the packaging and structuring of the investments.

**Regulatory Risk:** The IMF and WB recommended the Government of Sudan to lift subsidies from fuel, but it may continue to make diesel artificially inexpensive. The JP will rely on close relations with Ministry of Energy, Ministry of Finance and show strong case of investment in solar facilities and to spur the action on fuel subsidies.

Technical Risks are very minimal. Energy Research Center and Ministry of Energy and Mining will support required assistance to the JP.

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## **10. Convening the private sector and engaging IFIs/DFIs**

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The NSF will administer by a Bank Consortium, which follows rules and regulations established by the Bank of Sudan. The Consortium collects funds from each of the participating banks, then lend the fund through their branches with the stipulated Fund rules.

A Steering Committee (SC) will perform overall coordination and members comprise ministries, banks, UN and farmers. The Project Team comprises with legal, technical, administrative and financial advisors, who are responsible for the installation of the solar facilities under guidance of SC. The SC and the PT will work in collaboration with the Ministry of Finance and the Central Bank of Sudan.

The State Ministry of Agriculture acts as a link between the SC in Khartoum and State authorities, private banks and solar companies. In coordination with the Bank Consortium, assists on loan process and selection of loan-granted farmers.

The supplying companies provide and install solar facilities, product guaranteed for 20 years, including training and after sale services.

The farmers or VDC apply to the project team and to one of the bank branches to receive technical and loan approval. If successful, they will receive equipment and training from the supply companies and re-pay the loan annually as stipulated.

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## **11. Leverage and catalytic function**

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The National Solar Fund is populated with resources from a range of domestic and foreign organizations, which currently includes Treasury of Sudan, Sudan's banking sector, private sector technology suppliers, international finance mechanisms such as grant funds provided by GEF (USD 4.4 million) and bilateral partners such as Korea (USD 7 million) or China (USD 1.7 million) are base line as fund contributors. Potential future partners include International Finance Institutions and the engagement of different areas in the private sector.

According to the Sudan's Cabinet approval, resolutions number 58/2017 – Fifth: the axis of irrigation, the current situation and the future vision #1), the Government of Sudan has endorsed the exemption of all solar powered irrigation equipment from customs and other fees. At the same time, the Ministry of Finance and Economic Planning has approved the establishment of the National PV Fund. In total, USD 3 million of tax exemption for solar panels will be provided by the Ministry of Finance and Economic Planning. Moreover, the local component (i.e. project management cost) could be provided by the Ministry of Finance and Economic Planning.

Other Sudanese public institutions are also involved in the design and implementation of the National Solar Fund amounting to USD 15.55 million , such as USD 1 million from Ministry of Energy and Mining, USD 1 million from State Ministry of Agriculture, USD 0.5

million from Ministry of Irrigation and Water Resources, USD 0.5 million from Agriculture Research Center, USD 3 million for tax exemption and local component contribution from Federal Ministry of Finance, USD 1.5 million from State governments, USD 7 million for loan basic from Sudan's banking sector, USD 1.05 million for cash contribution from UNDP, UNICEF and UNHCR for capacity building of the Village Development Committee, Water Management Committee and farmers.

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## 12. Technical support and seed funding

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The full-fledged JP will be prepared in the country level based on the initiative of UNDP lead NSF scheme. UNDP, UNICEF and UNHCR team will form a task force and recruit an international consultant to prepare the JP with the support of national consultant. The task force will assure the quality of the project document in consultation with Regional Technical Advisors as well as to make sure for the country priority and needs. The required amount of project preparation cost is USD 57,500.

Outcome 1: Enabling policies and regulations are in place that address policy, institutional, regulatory and technical barriers to facilitate investment in solar facilities (USD 400,000 from SDG fund; Co-financing USD 500,000 from Ministry of Energy and Mining; USD 100,000 from UNDP; total USD 1,000,000). With regards on the policy and regulations, the JP will measure i) number of De-risking Renewable Energy Investment (DREI) analyses and identify cost effective instruments and included in policies; ii) completed solar ATLAS for all regions and included in Rural Electrification Strategy and Action Plan

Outcome 2: Strengthening capacity of end-users and promoting private sector engagement in the solar revolution programme (USD 7,000,000 from SDG fund; Ministry of Agriculture USD 1,000,000; Ministry of Irrigation and Water Resources USD 500,000; Agriculture Research Center USD 500,000; Ministry of Finance and Economic Planning tax exemption USD 3,000,000; State Government USD 1,500,000; Banks USD 7,000,000; UNICEF USD 35,0000; UNHCR USD 350,000; total USD 21,200,000) where the JP will measure i) number of solar water pump and minigrids developed by installed capacity kWp; ii) number of organizations with enhanced technical capacity to develop procurement with cost reduction; iii) numbers of trained people for operation and maintenance – gender disaggregated and iv) number of technical guidelines for different solar facilities

Outcome 3: Strengthened innovative financing mechanism – National Solar Fund – (SDG Fund USD 500,000; Ministry of Energy and Mining USD 500,000; UNDP USD 250,000; total USD 1,250,000) and accompanying financial instruments in place to incentivize investments in the development of solar facilities where the JP will measure i) NSF scheme strengthened and operationalized; and ii) number of market intelligence reports completed

The Project Management Cost will be used 5% of total programme cost. In total, full-fledged project preparation cost, programme cost and PMC cover USD 8,355,375 (57,500 + 7,900,000 + 397,875) which is excluded the GMS amount

## Signatures

Signed Signature Form

[Concept note template signature page.pdf](#) 186.6 KB

## Government Endorsement

## Letter of Endorsement

[A letter from the Undersecretary of Ministry of Energy and Mining.pdf](#) 199.69 KB