ANNEX 1
of the Commission Implementing Decision on the Annual Action Programme 2014 and 2015 part 1 in favour of Central Asia to be financed from the general budget of the European Union

Action Document for Central Asia Research and Education Network (CAREN3)

1. IDENTIFICATION

<table>
<thead>
<tr>
<th>Title/Number</th>
<th>Central Asia Research and Education Network 3 (CAREN3) CRIS number: DCI-ASIE/2014/037-569</th>
</tr>
</thead>
</table>
| Total cost   | Total estimated cost: EUR 12 500 000  
Total amount of EU budget contribution: EUR 10 000 000  
This action is planned to be co-financed in parallel by:  
The Government of Kazakhstan, EUR 750 000  
The Government of Kyrgyzstan, EUR 250 000  
The Government of Tajikistan, EUR 250 000  
The Government of Turkmenistan, EUR 750 000  
The Government of Uzbekistan, EUR 500 000 |
| Aid method / Management mode and type of financing | Project approach  
Direct management, grant – direct award |
| DAC-code     | 22040  
Sector  
Information and communication technology (ICT) |

2. RATIONALE AND CONTEXT

2.1. Summary of the action and its objectives

Over 500 000 Central Asian researchers, academics and students are benefitting from the high quality, high capacity international Internet connectivity the CAREN network provides. The CAREN network is being used for collaborative programmes with Europe in fields such as solar and environmental research, e-health and distance learning. The objectives for CAREN3 are to expand the network, promote applications and meet the growing demand for international bandwidth, seeking long-term project sustainability through co-funding by Central Asian partner countries.
2.2. **Context**

2.2.1. **Regional context**

2.2.1.1. Economic and social situation and poverty analysis

Advanced communication networks are very important contributors for the Millennium Development Goals. In particular, e-infrastructures are key to *global partnerships for development* (Goal n. 8), peering research teams and enabling collaboration in any scientific domain, and affect directly target 8f (*"In cooperation with the private sector, make available the benefits of new technologies, especially information and communications"*).

The advanced networks installed in many developing countries for research and education purpose use the same infrastructure to provide also capacity for many other services, generating additional added value in public and private activities in society at large.

E-infrastructures are a powerful enabler and can have an indirect effect on other Goals (e-Learning - *Goal n. 2 Universal Education*, e-Health – *Goals 4, 5 and 6 Child Health, Maternal Health and Combat HIV/AIDS*), and in general terms, thanks to the generation of a huge demand for educated human resources created by ICT needs in all sectors of society in the entire value chain, can also contribute to reduce poverty (*Goal n.1, Eradicate Extreme Poverty and Hunger*)

2.2.1.2. Regional development policy

One key action point under "Youth and education" of the conclusions of the mid-term review of the Central Asia Strategy is:

*"Further promote co-operation between EU and Central Asian research institutions, including through initiatives such as the Central Asia Regional Education Network (CAREN)"*

2.2.2. **Sector context: policies and challenges**

The UNESCO "Broadband Commission Working Group on Broadband and Science" report states:

*"Broadband connectivity has become a basic infrastructure of modern society, just like roads, electricity or water. In particular, high-speed, high-capacity broadband connections have become indispensable to Science and Education communities, transforming the scientific process by enabling the instantaneous sharing of knowledge, virtual collaborations within and between continents, and remote access to scientific resources and instruments".*

Operational since July 2010, the Central Asian Research and Education Network (CAREN) provides a dedicated high-capacity Internet network,

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2. "Conclusions of the mid-term review Central Asia Strategy" adopted at the 3179th Foreign Affairs Council meeting (Luxembourg) of 25th June 2012
connecting scientists and students at over 300 institutions across Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan via the national research and education networks (NRENs\(^3\)). The first phase of the CAREN project was successfully completed in October 2013. CAREN2 initially runs to March 2015.

Each NREN is responsible for its national network and for serving its user communities. CAREN provides the intra-regional connectivity between the Central Asian NRENs and the inter-regional connections with Europe and other research and education communities around the world.

The telecommunications markets within Central Asia remain challenging with limited competition and modern fibre-optic telecommunications networks still under construction. This means that direct links between the Central Asian countries have so far proved impossible or unaffordable for CAREN. It has been possible to achieve the CAREN connectivity through skilful technical engineering and the goodwill and support of other regional research & education networks (GÉANT and TEIN). However, the Network Operating Centre (NOC) is in the region and located at the National IT Centre (NITC) in Bishkek. In the future a physical network within Central Asia with links to other regions shared by the partners is the desired way forward for resilience and quality once it can be provided cost effectively.

The CAREN NREN members are gradually increasing their bandwidth capacity not only because of an increase of the number of institutions, but also to meet the demands of their communities. For example one of the oldest universities in Kazakhstan, the Kazakh National Agrarian University in Almaty uses 70 Mbps of the capacity provided by CAREN for their 10,000 students, 900 staff members and their collaboration with more than 20 international partners. In Kyrgyzstan one university took more than 50% of the 155 Mbps circuit that was available in 2013. The universities explicitly want to integrate into the international educational space by joining the International Network of Universities. Within the HEI’s the usage of bandwidth is mainly for educational support for teachers and students. The CAREN connectivity has made it possible to implement Electronic Learning Environments at various institutions enabling a transformation of educational practice. Further the CAREN NRENs attract organisations that want to collaborate with the CAREN NRENs in the Virtual Science Library\(^4\). Regional collaboration between HEI’s has also become possible, for example the interconnection of the campuses of the University of Central Asia of the Aga Khan Development Network. An example of the advanced services that are being offered to the community and that can only be provided by a CAREN NREN is IPv6 deployment\(^5\). The

\(^3\) The Central Asia NRENs are:
- KazRENA (Kazakhstan Research and Education Networking Association)
- KRENA (Kyrgyz Research and Education Network Association)
- TARENA (Tajikistan Research and Education Networking Association)
- TuRENA (Turkmenistan Research and Education Networking Association)
- UzSciNet (Uzbekistan Research and Education Networking Association)

\(^4\) [http://www.crdgglobal.org/focus-areas/capacity-building/virtual-science-libraries](http://www.crdgglobal.org/focus-areas/capacity-building/virtual-science-libraries)

\(^5\) IPv6 (Internet Protocol version 6) has significantly more address space than IPv4. The expanded addressing capacity of IPv6 will enable the trillions of new Internet addresses needed to support connectivity for a huge range of smart devices.
Universities also use CAREN for the implementation of TEMPUS and Erasmus Mundus projects.

In the period last quarter of 2013 to the first quarter 2014, circuits to Tajikistan and Turkmenistan were upgraded from 35Mbps to 155Mbps whilst Kazakhstan’s and Kyrgyzstan’s links were upgraded from 155Mbps to operate at a capacity of 622Mbps and 600Mbps respectively. The link capacities have thus been quadrupled and since the start of the project costs per Mbps have fallen eleven-fold - a major achievement considering the challenges of the telecommunications markets within Central Asia. Following the upgrade, the volume of traffic on the network increased by over three fold, demonstrating that there is high demand for international connectivity by the R&E community. The upgrade, together with improved network performance provides an additional boost to research and education collaborations within the region and further afield in areas such as seismology, glacier monitoring, distance education and solar technology.

Due to the higher capacity links, telemedicine is now high on CAREN’s list of applications. Central Asian medical doctors and network engineers have started participating remotely in Asia Pacific Advanced Network (APAN) medical sessions and have recently started their own telemedicine events such as the conference organised on 26th March 2014 by the National Cardiology Centre in Bishkek, Kyrgyzstan with participants across the region connected via high-quality video links.

2.3. Lessons learnt

Experience gained in the field of regional research and education networks through EU funded projects (Latin America – ALICE/RedClara; South East Asia – TEIN; Sub-Saharan Africa – AfricaConnect; Central Asia – CAREN; Mediterranean - EUMEDCONNECT) demonstrates the high value of the investment in stimulating regional cooperation, enabling cooperation with Europe as well as aligning to European technical standards. These projects also demonstrate the capacity of the Contractor – DANTE the operator of GÉANT - to procure and operate capacity outside Europe while keeping high level of transparency and accountability (see point 4.3.1 (b) below).

In the EU, the GÉANT network benefits from full public funding. In Asia, the TEIN (Trans-Eurasia Information Network) project is 50% co-funded by the partner country governments through their NRENs.

To date, and with the exception of Turkmenistan, there has been no public funding of CAREN or the NRENs in Kazakhstan, Kyrgyzstan or Tajikistan, calling into question the longer-term sustainability of the project. CAREN NRENs are expected to charge reasonable fees to end-users, generating revenues to help i) build their financial resources ii) develop their institutional capacity and iii) further extend the national and international Internet network. Due to very high interconnectivity costs in Central Asia, the NRENs are barely able to generate sufficient income to co-fund CAREN international connectivity costs, let alone build financial resources or extend their domestic Internet network.
Measures are required by the EU and other stakeholders to raise awareness and obtain funding from Central Asia partner countries for the CAREN3 project and NRENs⁶.

Therefore, as a prerequisite to CAREN3 implementation, the financing agreement is expected to be countersigned by each prospective partner country specifying an indicative co-funding amount (see section 4.5) with disbursement to start not later than 18 months after the date of any grant award to DANTE.

The co-funding amount will be determined according to the partner country's ranking (or prospective ranking) in the DAC list of ODA recipients (see Section 4.5).

2.4. Complementary actions

In the period 2014-2020, education will be a focal sector of EU bilateral assistance in Kyrgyzstan, Tajikistan and Turkmenistan. In Kyrgyzstan, funding will be primarily in the form of sector budget support for education sector reform continuing and consolidating earlier assistance programmes. In Tajikistan, funding will be to improve the quality of secondary education and vocational education and training, and re-establish the nexus with the labour market. In Turkmenistan, funding will be focused on completion of the ongoing modernization process of Secondary Education and the VET system.

High capacity, high quality Internet links between Central Asian and EU universities provided by CAREN are essential infrastructure to successfully implementing capacity building projects under the external dimension of Erasmus+ (2014 -2020). CAREN will create useful links with other EU funded programmes such as the Rule of Law, Water and Environment and Education Platforms, The Action plan on Drugs and the Research Framework Programme (FP8 and 7) and the EU – CA Strategy Initiatives.

Globally, the EU co-finances dedicated high-speed, high capacity Internet networks for research and education in Europe (GÉANT), Asia (Trans-Eurasia Information Network, TEIN), Central Asia (CAREN), China (ORIENTplus), the Mediterranean rim EUMEDCONNECT, Africa (AfricaConnect), Latin America(ALICE2 now RedCLARA) and the Caribbean (C@ribNET). To date, the EU has contributed about €75 million to the regional networks (excluding GÉANT).

2.5. Donor coordination

There are no other projects in Central Asia which aim to fund a dedicated high-capacity Internet for research and education communities in Kyrgyzstan, Tajikistan, Turkmenistan, Kazakhstan and Uzbekistan.

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⁶ NRENs use a wide range of technologies, operational approaches and procedures that require constant evolution driven by the new technological and scientific needs. They act both as a motor and as a "test bed" for new technologies, for example in new networking protocols that will be implemented a few years later in the commercial networks. Since they are serving closed user groups for public good and are strictly non-commercial, they can be used to explore new regulatory and technological solutions without the risk of distorting competition.
3. **Detailed Description**

3.1. **Objectives**

The objective of the CAREN3 project is to maintain and further develop a high-capacity Internet network for research and education communities in Central Asia, providing the region with a gateway to strengthen research and education collaboration with EU counterparts whilst seeking long-term project sustainability through co-funding by Central Asian partner countries.

3.2. **Expected results and main activities**

The expected results and main activities for CAREN3 are to provide uninterrupted, high quality, high speed Internet connectivity to more than 500 000 end-beneficiaries and to meet the growing demand for international bandwidth, serving the cooperation between Central Asia and EU institutions.

The main activities are divided into 4 work packages (WP).

**WP1: Project management**

- Convene Executive Committee (ExCo) meetings:
  - Twice per year face to face project meetings with NRENs
  - Monthly meetings by video conference
- Convene CAREN Steering Committee (SC) meetings with Central Asian ministry officials, chaired by EC, once per year in conjunction with one of the ExCo meetings
- Hold monthly Technical working group meetings once per month by video conference and alongside at least one ExCo meeting per year
- In conjunction with the EC, secure connection of Uzbekistan in the CAREN project by 2016
- Periodically update CAREN Collaboration Agreement between NRENs and DANTE as required
- Develop new NREN business propositions based on supporting stakeholders’ regional challenges (e.g. climate change, telemedicine) and national needs (e.g. national coverage, higher education rollout)
- Support the EC and NRENs’ efforts to secure national funding for longer term sustainability
- Further develop collaboration with the global R&E community and supporting institutions including:
  - GEANT (Europe)
  - TERENA\(^7\)
  - TEIN\(^8\) (North, South and East Asia)
  - E@P.connect\(^9\) (Eastern Europe and Caucuses)
  - Internet Society (ISOC)\(^10\)

\(^7\) TERENA (Trans-European Research and Education Networking Association) is a sister organisation of DANTE providing a forum for collaboration through task forces, projects, workshops and an annual conference for member organisations and the wider R&E community

\(^8\) Trans-Eurasia Information Network (TEIN) providing regional research and education network for over 50M users in in 18 countries in North, South and East Asia, currently in its 4\(^{th}\) phase under EC contract with the TEIN*Co-operation Centre (a Korean not for profit organisation)

\(^9\) E@P.connect is a proposed regional R&E project to serve Georgia, Armenia, Azerbaijan, Belarus, Ukraine and Moldova planned to start in 2015
WP2: Network tendering, operations and service development

- Network procurement\(^1\)
  - Re-tender the CAREN2 network every 12 – 18 months to grow capacity and increase price competitiveness
  - Establish Central Asian-hubbed network as soon as cost effective
  - Collaborate with European in partners in service procurements (such as personal and web server certificates of TERENA\(^2\)).

- Network Operations
  - Operate the regional CAREN network
  - Benchmark CAREN NOC versus other regional R&E NOCs and NREN requirements
  - Further develop real time network monitoring, including handling network (security) issues in a transparent and auditable fashion and continue to provide monthly reporting
  - Participate in the network monitoring activities of the EU research and education community

- Service development
  - Continue deployment of Eduroam\(^3\) in Central Asia and fully participation in the Eduroam service global community
  - Continue deployment of IPv6\(^4\) according to NREN requirements
  - Introduce Authentication and Authorization Infrastructure for Central Asian researchers
  - Implement a regional Internet exchange point\(^5\) with network caching\(^6\) facilities provided by large service providers.

WP3: Promoting and developing network applications

- Support customised application development and network service deployments for the NREN user community to add value versus the

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\(^1\) The Internet Society (ISOC) is an international, non-profit organization founded in 1992 to provide leadership in Internet related standards (IETF), education, and policy. ISOC has national chapters throughout the world.

\(^2\) Procurement will be carried out according to public procurement rules of European Union including specific conditions with DANTE implementing the project.

\(^3\) The TERENA Certificate Service provides digital certificates that are recognised by the major browsers and devices to the user communities of participating NRENs.

\(^4\) Eduroam (education roaming) is an international roaming service for users in research, higher education that provides wireless network access based on credentials of the home organization. Eduroam has been successfully deployed throughout the world.

\(^5\) IPv6 is the latest version of the Internet Protocol (IP) that extends communication in terms of addressability, security, meanwhile keeping the functionality and interworking of previous Internet Protocol (IPv4).

\(^6\) An Internet exchange point is a physical infrastructure through which Internet service providers (ISPs) exchange Internet traffic between their networks.

\(^7\) Network caching is a computer network traffic management technology used by Internet Service Providers (ISPs) to accelerate the reach of popular content from their local infrastructure by reducing related bandwidth costs and delay.
commodity internet market and retain the research and education institutions.

- Strengthen CAREN Support Office coordination and support of these activities including a dedicated service manager
- Provide technical support and showcase reference projects and their champions in priorities areas of the EU Central Asia Strategy and EU Central Asia initiatives including:
  - eTwinning with EU partners
  - eHealth
  - Disaster management
  - eLearning
  - eCulture
- Extend the collaborative support facilities for Central Asian researchers provided by the iCAREN Portal
- Extend the availability of ICT platforms (such as Google Apps, Office 365) for education
- Support introduction and use of eLearning systems
- Support the development of regional eLibrary case
- Coordinate marketing activities to promote Central Asian participation in the Horizon 2020 programme, and other similar EU research and education programmes (e.g. e-twinning for schools networking) via targeted meetings
- Organise annual CAREN regional conferences hosted on a rotating basis by the Central Asian partners
- Develop marketing activities to communicate to the region’s R&E users and funders the benefits of NREN

WP4: Support to NRENs and human capacity development

- Organise regional workshops to introduce evolving technologies, such as Authentication, Authorisation and Identification (AAI).
- Develop current NREN business models into annual business planning and forecasting processes.
- Work with leading training providers to develop multi-year training programmes to equip the NRENs with evolving technical skills e.g. with Network Start-Up Resource Center (NSRC), ISOC, RIPE.

The iCAREN Portal - [http://www.icaren.org](http://www.icaren.org) - is the central source of information of CAREN activities that targets the end users – researchers, university lecturers and students – both in Russian and English.

The Authentication and Authorization Infrastructure (AAI) enables users from research and science institutions to access protected resources of service providers via the research and education network, e.g. scientific publications, licensed software, supercomputers or Grid resources.

The focus of these trainings will be on getting certified staff, goal is at least two certified engineers per NREN.

The Network Startup Resource Center (NSRC) is a non-profit organization, based at the University of Oregon, that supports deployment of Internet research and education networks in academic institutions and non-governmental organizations throughout the Asia Pacific region, Africa, Latin America and the Caribbean, the Middle East, and newly Independent States.
• Develop business management training programme for Central Asian NREN senior managers
• Staff exchange programs between CAREN NRENs and participate in European R&E exchange programmes
• Promote access to European Education Programmes in Erasmus+

3.3. Risks and assumptions
In the 18 month period prior to any commencement of co-funding by partner countries (see section 4.1), the EU will finance up to 90% of project costs with 10% project co-funding to be collected by the EC contractor DANTE through a cost sharing model where national NRENs contribute according to a commonly agreed formula.

3.4. Cross-cutting Issues
High-speed, high-capacity broadband connections to the Internet are an essential element in modern society, offering wide social and economic benefits. Expanding broadband access in every country is key to accelerating progress towards the Millennium Development Goals (extracted from the Final Report of the "Working Group on Broadband and Science", see footnote 1).

3.5. Stakeholders
The principal stakeholders in Central Asia are i) the governments of the Central Asian republics ii) National Research and Network associations (NRENs), iii) research and education institutions and iv) the end-beneficiaries who are staff and students of these institutions. More generally, the European R&E community stands to benefit from links with talented individuals in the Central Asian republics.

4. IMPLEMENTATION ISSUES
4.1. Financing agreement
In order to implement this action, it is foreseen to conclude a financing agreement referred to in Article 184(2)(b) of the Financial Regulation, which is countersigned by the five partner countries.

The financing agreement will be signed bilaterally between the EU and countersigned by each partner country. The annex to the financing agreement must include a co-funding amount from the partner country concerned. The co-funding amount will be determined according to the partner country's ranking (or prospective ranking) in the DAC list of ODA recipients. The indicative percentage contribution of each partner country, co-funding amounts and EC contribution are given in Section 4.5. The financing agreement will include a

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21 The RIPE community develops and sets policies for the technical coordination of the Internet and the management and distribution of Internet resources (IP addresses and Autonomous System (AS) Numbers) through a long established, open, bottom-up process of discussion and consensus-based decision making.
review of the results achieved by CAREN1 & 2 and describe the prospective development of the project under CAREN3.

The award of a grant contracts to DANTE is subject to the prior countersignature of a financing agreement by at least two partner countries. Only those countries that countersigned the financing agreement can participate in the project.

In order to allow sufficient time for partner countries to carry out their budgetary procedures, the financing agreement will allow a maximum period of 18 months from the date of the first grant award to DANTE to the start of partner country co-funding disbursement. In this 18 month transitional period, the EC contribution may be contracted to the benefit of those partner countries countersigning the financing agreement on a pro rata temporis rule calculated on the basis of the remaining implementation period, indicated hereunder, after the signature of the first grant contract.

4.2. **Indicative operational implementation period**

The indicative operational implementation period of this action, during which the activities described in sections 3.2 and 4.3 will be carried out is 48 months from the date of entry into force of the financing agreement, i.e. after the second country has countersigned, or, where none is concluded, from the adoption of this Action Document, subject to modifications to be agreed by the responsible authorising officer in the relevant agreements. The European Parliament and the relevant Committee shall be informed of the extension of the operational implementation period within one month of that extension being granted.

4.3. **Implementation components and modules**

4.3.1. **Grant: direct award (direct management)**

(a) Objectives of the grant, fields of intervention, priorities of the year and expected results

The CAREN network is starting to be used for collaborative programmes with Europe in fields such as solar and environmental research, e-health and distance learning. The objective of the grant is to expand the network, promote applications and meet the growing demand for international bandwidth of research and education communities in Central Asia.

(b) Justification of a direct grant

Under the responsibility of the authorising officer by delegation, the grant may be awarded without a call for proposals to DANTE (Delivery of Advanced Network Technology to Europe). DANTE was established in 1993 in Cambridge (UK) by 11 of Europe's NRENs National Research and Education Network associations (NRENs) as a cost-effective vehicle to co-ordinate pan-European research networking on their behalf.

Under the responsibility of the authorising officer by delegation, and as required by art.190 (1), c of RAP of FR, the recourse to an award of a grant without a call for proposals is justified because DANTE has exclusive competence in planning, building and operating dedicated pan-European
Internet research networks for the R&E community, constituting a "de facto" monopoly in this specialised field of activity.

DANTE has much experience and expertise in planning, building and managing networks in many similarly challenging regions. Over the years, DANTE has taken on the responsibility of the regional projects in Latin America, Asia Pacific, the Mediterranean, and South-East Africa. This involves bearing the considerable financial risk for the collection of the beneficiary contribution from the many NREN partners in these projects.

(c) Eligibility conditions
Not applicable, as the direct grant beneficiary is mentioned in (b) above.

(d) Essential selection and award criteria
The essential selection criteria are financial and operational capacity of the applicant.

The essential award criteria are the capacity to plan, build and cost-effectively operate dedicated high capacity, high quality Internet networks for the R&E community.

(e) Maximum rate of co-financing
The maximum possible rate of co-financing for this grant is 90 %.

The EU contribution at the end of the project could be 80% if all five partner countries participate in the project and disburse the indicative co-funding amounts (see section 1. Identification)

The maximum possible rate of co-financing may be up to 100 % in accordance with Articles 192 of the Financial Regulation if full funding is essential for the action to be carried out. The essentiality of full funding will be justified by the responsible authorising officer in the award decision, in respect of the principles of equal treatment and sound financial management.

(f) Indicative trimester to contract the potential direct grant beneficiary
Second trimester of 2015.

4.4. Scope of geographical eligibility for procurement and grants

Subject to the following, the geographical eligibility in terms of place of establishment for participating in procurement and grant award procedures and in terms of origin of supplies purchased as established in the basic act shall apply.

The responsible authorising officer may extend the geographical eligibility in accordance with Article 9.2(b) of Regulation (EU) No 236/2014 on the basis of urgency or of unavailability of products and services in the markets of the countries concerned, or other duly substantiated cases where the eligibility rules would make the realisation of this action impossible or exceedingly difficult.
4.5. **Indicative budget**

<table>
<thead>
<tr>
<th>Module</th>
<th>Percentage Co-financing</th>
<th>Contribution (EUR)</th>
<th>Third party contribution (Indicative where known) (beneficiary)</th>
</tr>
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<tbody>
<tr>
<td>Direct grants to DANTE (direct management)</td>
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<td>10 000</td>
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<td></td>
<td></td>
<td>2 500</td>
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</tbody>
</table>

The indicative percentage contribution of each partner country, co-funding amounts and EC contribution are shown in the table below.

<table>
<thead>
<tr>
<th>Module</th>
<th>Percentage Co-financing</th>
<th>Contribution (EUR)</th>
<th>Total Cost (EUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kyrgyz Republic Other Low Income Country</td>
<td>10%</td>
<td>250 000</td>
<td>2 250 000</td>
</tr>
<tr>
<td>Tajikistan Other Low Income Country</td>
<td>10%</td>
<td>250 000</td>
<td>2 250 000</td>
</tr>
<tr>
<td>Uzbekistan Lower Middle Income Country</td>
<td>20%</td>
<td>500 000</td>
<td>2 000 000</td>
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<tr>
<td>Turkmenistan prospective Upper Middle Income Country</td>
<td>30%</td>
<td>750 000</td>
<td>1 750 000</td>
</tr>
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<td>Kazakhstan Upper Middle Income Country</td>
<td>30%</td>
<td>750 000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>80%</strong></td>
<td><strong>2 500 000</strong></td>
<td><strong>10 000 000</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td><strong>12 500 000</strong></td>
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</tbody>
</table>

4.6. **Performance monitoring**

The principal indicators are i) uninterrupted, reliable, high speed and high quality Internet provision to Central Asian R&E communities (network metrics such as latency, bandwidth and throughput will be used as indicators), ii) the growth of the user base iii) development of network services for NRENs and iv) a growing number of research and education collaborations using CAREN.

Regular project performance monitoring will be ensured by the participation of an EC representative in the regular Executive Committee and Project Steering Committee meetings as well as progress assessment reports submitted on this occasion.

4.7. **Evaluation and audit**

There have been two results-oriented monitoring (ROM) reports. If needed, further monitoring could take place. At the end of the project an evaluation will be carried out to assess the project results, impact and sustainability.
Audit arrangements are part of the contractual arrangements with the selected granted. In addition, external audits could be carried out by independent consultants recruited directly by the contracting authority in accordance with European Commission rules and procedures.

4.8. **Communication and visibility**

Communication and visibility of the EU is a legal obligation for all external actions funded by the EU.

This action shall contain communication and visibility measures which shall be based on a specific Communication and Visibility Plan of the Action, to be elaborated before the start of implementation and supported with the budget indicated in section 4.5 above.

The measures shall be implemented either (a) by the Commission, and/or (b) by the partner country, contractors, grant beneficiaries and entrusted entities. Appropriate contractual obligations shall be included in, respectively, financing agreements, procurement and grant contracts, and delegation agreements.

The Communication and Visibility Manual for European Union External Action shall be used to establish the Communication and Visibility Plan of the Action and the appropriate contractual obligations.