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## **Twelfth meeting of the Thematic Working Group on Trade**

## ***Achieving Trade Facilitation and Sustainable Development in Central Asia***

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**Water-food-energy-ecosystems nexus**

**in SPECA countries from the perspective**

**of sustainable trade**

**UNECE research paper**

**This Background paper for the Twelfth meeting of the Thematic Working Group on Trade has been prepared by Mr. Bo Libert, UNECE international expert and consultant. The views in this document are those of the author and do not necessarily express the position of the UNECE and the SPECA participating countries.**

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# Introduction

This research and policy report reviews the water-food-energy-ecosystems nexus in the SPECA countries from the perspective of sustainable trade. The report aims to provide practical recommendations for policy makers in the countries participating in the UN Special Programme for the Economies of Central Asia (SPECA) on how to support trade growth while at the same time promoting sustainable development. It is a contribution to the effort of the international community to assist the SPECA countries to achieve the Sustainable Development Goals (SDGs). The focus of the paper are case studies, involving agricultural and other trade practices in the region and specific issues related to sustainable development that can be efficiently addressed through innovative approaches and sub-regional cooperation.

The basic factors that will be analysed in this report are: trade in goods and energy as an engine for growth, creation of decent jobs and incomes, food security and production, sustainable water management and environmental protection.

The report presents a conceptual framework for policies that can build synergies between efforts to develop the economy and trade while fostering sustainable development in the SPECA sub-region, in individual countries and in sets of countries. Recommendations are proposed that can help the countries align their trade development policies with their sustainable development priorities in the framework of the United Nations 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs).

Lack of cooperation not only in the trade area leads to lost opportunities to the Central Asian countries in terms of GDP growth and unsustainable economic practices. The situation is similar in other sectors such as water, energy and agriculture, and the causes of these lost opportunities are often linked.

A considerable number of the globally adopted Sustainable Development Goals will be more easily achieved by an improved sub-regional cooperation in Central Asia and among SPECA countries. For example, in the SPECA framework, the Working Group on Environment, Water and Energy concluded at its meeting in 2017[[1]](#footnote-1) that improved sub-regional cooperation would significantly help in achieving SDG 6 (Clean water and sanitation) and SDG 7 (Affordable and clean energy).

In addition to the potential contribution of sub-regional cooperation to the implementation of several SDGs, there are also other opportunities for development that would be facilitated by an improved intersectoral cooperation and coordination, inside countries or regionally. This will also be exemplified in this report.

It is a positive feature that there is a strong political support to deepening regional cooperation in Central Asia. The Nowruz holiday statement of Central Asian Presidents from March 2018 notes that:

“...we express our desire for regional cooperation, mutual support and joint solutions to pressing issues, in order to ensure the security, stability and sustainable development of our entire region”

“…the rational development of water, energy and food potential…will contribute to the sustainable growth of the well-being of the peoples of Central Asia.”

The description on water use and agriculture below is focusing on the Aral Sea Basin shared by six SPECA countries: Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. The situation in Azerbaijan is somewhat different, partly due to its geographical position, but the report also covers relevant issues related to this country.

# SDGs, Green Economy and trade

The 17 Sustainable Development Goals (SDGs) were adopted in 2015 by the UN General Assembly. For the UN and its member States, the achievement of the SDGs includes developing trade as an engine for growth, sustainable development, and poverty eradication.

Direct references to trade are found in several SDG targets:

* “Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round” (SDG 2, Zero hunger, target 2B)
* “Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries” (SDG 8, Decent work and economic growth, target 8a)
* “Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda” (SDG 17, Strengthen the means of implementation and revitalize the global partnership for sustainable development, target 10)
* “Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries’ share of global exports by 2020” (SDG 17, target 11)

There are trade-related indicators linked to these targets. The indicator for 8a is “Aid for Trade commitments and disbursements”, for 17.10 “Worldwide weighted tariff-average” and 17.11 “Developing countries’ and least developed countries’ share of global exports”.

Several other SDGs are linked one way or another to trade and trade policies. A couple of additional examples are SDG 7 (Sustainable energy), SDG 9 (Industry, innovation and infrastructure), SDG 10 (Reduced inequalities) and SDG 14 (Conserve and sustainably use the oceans, seas and marine resources).

At the same time, consumers are increasingly demanding products that are not only organic or free of hazardous chemicals but also produced sustainably without harm to the environment. Trade can become more sustainable if it leads to a shift from the established production and consumption of goods and services, to the production and consumption of more environmentally, socially and economically sustainable goods and services.

In this context environmental standards are crucial, with labelling or certification schemes as important components. These are non-tariff measures aimed at setting specific requirements that pursue objectives such as environmental protection.

The Doha Ministerial Declaration under WTO included the statement “reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services”, but no further progress can be demonstrated for the time being.

The Green Economy concept[[2]](#footnote-2) was recognized as an important tool for achieving sustainable development in the outcome document of the United Nations Conference on Sustainable Development in 2012 (Rio+20). Already in 2013 Kazakhstan adopted a concept for the transition of the country to a green economy and other SPECA countries have included key green economy principles in their strategic planning.

In the development of a “Green Economy” trade policy is important. A document outlining the conditions for Green Economy was approved at the Eighth Ministerial Conference Environment for Europe that took place in Batumi in June 2016, including by the participating SPECA countries. Focus Area 6 of the Pan-European Strategic Framework for Greening the Economy (BIG-E) adopted in Batumi, promotes “Green and Fair Trade”.

Central Asia has often seen itself at the cross-roads between Europe and Asia or as the core of Eurasia. This vision is evident in the Astana “Green Bridge” initiative, adopted at the Ministerial Conference on Environment and Development in Asia and the Pacific in October 2010 and approved by the Pan European Conference “Environment for Europe” in September 2011. Both meetings took place in Astana. The initiative led by Kazakhstan envisages Central Asia as a bridge between Europe and Asia in the areas of sustainable business and environmental protection, with the aim to improve economic growth and conservation of natural resources.

The Interstate Commission for Sustainable Development (ICSD), which is part of the structure of International Fund for Saving the Aral Sea (IFAS), was established to coordinate and manage regional cooperation on environment and sustainable development in Central Asia. Its tasks included the development of a regional strategy for sustainable development, and programmes and plans for sustainable development. The intention was that ICSD would include representatives of Ministries of Economy from Central Asian states but with time its work has focused more on environmental issues.

UN Environment has produced research on the links between green economy and trade (UNEP 2016a) and some of the conclusions are relevant for this report. This research stresses that demand for sustainability-certified products in international markets is on the rise, and that new markets for green goods and services are opening, with many markets for green products growing faster than conventional markets. Several of the sustainable trade opportunities identified by UN Environment are related to agricultural and fish production, and the corresponding studies could help in the development of action programmes for SPECA countries.

UN Environment has established an “Environmental and Trade Hub”[[3]](#footnote-3) to support countries in the development of green trade policies. The following aspects of trade policy development are stressed in view of support to a green economy:

* Fully incorporate Sustainable Development into trade policy and negotiations
* Ensure compatibility between trade agreements and multilateral environmental agreements
* Conduct vigorous environmental impact assessment for trade policies and agreements
* Strengthen environmental enforcement mechanisms
* Build capacity for economic diversification and investments in renewable resources
* Improve transparency and Public Participation in trade policy making[[4]](#footnote-4)
* Maintain highest environmental and consumer protection standards
* Ensure policy space and appropriate obligations for environmental management

As this report will show, there is a wide range of opportunities to develop trade as a supporting pillar of sustainable development and green economy.

An important part of the analysis in this report is related to comparative advantages and efficiency in the agricultural sector against the background of national food security policies. How can an efficient and sustainable, and at the same time profitable agricultural production be promoted? Another example is energy production and trade that can contribute to improved water management and cooperation in the Aral Sea basin.

A particular aspect of SDGs and trade has to do with the opportunity to trade in higher value-added products rather than raw materials thus contributing to the creation of jobs, moreover, more decent jobs. For SPECA countries the example of cotton is particularly important with several possibilities to add value to the traded product. Based on investments in machinery, Uzbekistan and Turkmenistan have built an added-value textile chain that comprises all stages of production from the cotton fibre to the ready-made clothing. In Uzbekistan the production of cotton yarn has increased and was in 2014 30% of the cotton production (Rieter 2015), while in 1991 the volume of fibre processing did not exceed 7 percent[[5]](#footnote-5). Based on value, raw cotton constituted only 28% and cotton yarn 44% of exports of cotton products with additional more processed textile products contributing the rest in 2015[[6]](#footnote-6). This is a positive development but there are considerable opportunities to further increase the processing of cotton before it leaves the SPECA countries.

# Agriculture

Agriculture is an important sector in all SPECA countries. In 2010, the agricultural sector contributed 10.4 percent to the GDP of the Central Asia region. This ranged from 5 percent in Kazakhstan to 30 percent in Afghanistan[[7]](#footnote-7). The proportion of the economically active population that was employed in 2017 in the farming sector was 6 percent in Turkmenistan, 19 percent in Kazakhstan and Uzbekistan, 32 percent in Azerbaijan, 40 percent in Kyrgyzstan and 60 percent in Afghanistan[[8]](#footnote-8).

In Afghanistan, agricultural land and production is private but the situation of land ownership and land access rights is very complex. The long period of war and political instability has further complicated the land tenure system. Agricultural land in Azerbaijan has been privatised, while much of the production is managed in cooperatives and similar forms. In Kazakhstan and Kyrgyzstan, agricultural land is mainly privately owned. In Tajikistan steps are taken towards privatization but the land is still owned by the state as in Uzbekistan where land remains state owned and use rights are transferred to farmers. Turkmenistan formally recognizes private land ownership, but virtually all land in the country is owned by the state and is rented by farmers and farmers´ associations (FAO Gender and Land Rights Database 2018, Lerman and Sedik 2009).

As the SPECA countries are arid, with limited precipitation, irrigation plays a key role. The agricultural sector in Central Asia represents about 90% of the total water use. The region currently possesses a set of resources: water, suitable agricultural land, a good climate for many crops, as well as skilled farmers. There are well developed - although frequently inefficient and not well maintained - irrigation systems.

Since independence, the area of irrigated land has not changed significantly in the Central Asian states although in Uzbekistan, Kyrgyzstan and particularly Tajikistan some previously irrigated areas have been abandoned.

There are present and future concerns. Climate change leads in the long term to higher average temperatures and more water per ha will be needed for irrigation. At the same time, less water is likely to be available due to melting of glaciers and decreasing precipitation during summer. But there are significant opportunities for water savings in all SPECA countries for example by improving the water infrastructure and methods for irrigation (see section 8b).

The most frequently identified adaptation strategies in agriculture to manage the on-going climate change include: modified sowing periods, changing crops and varieties and encouraging more effective use of inputs, particularly of water. However, the majority of farmers do not have the financial means to carry out significant modifications in their operations. In the coming ten to twenty years, Central Asia's susceptibility to the effects of climate change may be determined less by climate change itself and more by socio-economic factors and the legacy of the past that saw wide-spread environmental mismanagement and neglect of infrastructure.

It is a widespread problem that farmers have insufficient access to credit, modern inputs, and services in terms of marketing of their products. Training and advisory services for farmers are under development but much remains to be done. Some of the SPECA countries experience large-scale labour emigration, which has resulted in a considerable drop in the workforce, most notably in the agricultural sector.

Table 1 and 2 illustrates the acreage of arable and irrigated land in the SPECA countries, and the distribution of major irrigated crops in the sub-region.

*Table 1. Total arable and irrigated land (1000 ha) in SPECA countries. Irrigated land statistics from Dukhovny et al (2017) except for Afghanistan (FAOSTAT). Figures for Arable land and permanent crops from FAOSTAT.*

|  |  |  |
| --- | --- | --- |
| SPECA countries | Land equipped for irrigation, various years,  2003-2010 | Arable land and permanent crops |
| Afghanistan | 3199 | 7910 |
| Azerbaijan | 1426 | 2160 |
| Kazakhstan | 2066 | 29,527 |
| Kyrgyzstan | 1021 | 1356 |
| Tajikistan | 742 | 870 |
| Turkmenistan | 1990 | 2000 |
| Uzbekistan | 4198 | 4770 |

*Table 2. Acreage of crops on irrigated land (1000 ha) in the Aral Sea Basin (ASB) 2005 and 2015 (CAWaterInfo 2017, data for Kyrgyzstan from 2013 and from Uzbekistan from 2014).*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Countries | Cotton 2005 | Cotton 2015 | Cereals 2005 | Cereals 2015 | Rice 2005 | Rice 2015 | Fruits 2005 | Fruits 2015 | Vege-tables 2005 | Vege-tables 2015 |
| Kazakhstan | 204 | 99 | 207 | 158 | 119 | 185 | 16 | 17 | 31 | 41 |
| Kyrgyzstan | 42 | 16 | 38 | 16 | 5 | 3 | 27 | 6 | 18 | 5 |
| Tajikistan | 169 | 176 | 296 | 388 | 13 | 21 | 27 | 52 | 26 | 31 |
| Turkmenistan | 837 | 546 | 950 | 824 | 58 | 17 | 16 | 18 | 19 | 31 |
| Uzbekistan | 1439 | 1285 | 1514 | 1132 | 73 | 28 | 729 | 321 | 138 | 188 |
| Total in ASB | 2691 | 2122 | 3005 | 2518 |  |  |  |  |  |  |

National policy as well as geography and climate favour two major export crops: cotton in the south on irrigated land; and wheat on rainfed land in the north. A large proportion of irrigated land is also used for cultivation of cereals. Between 2005 and 2015 the share of cotton declined slightly from 34 to 27 percent of irrigated area in the Aral Sea basin (CAWaterInfo 2017, Table 1). In the same period, the irrigated area under cereals decreased from 38 to 32 percent.

While there is a trend of decreasing production, cotton remains particularly important for Tajikistan, Turkmenistan and Uzbekistan. In 2015 19% of all exports from Uzbekistan were derived from cotton[[9]](#footnote-9). According to FAOSTAT production between 2005 and 2014 declined in Azerbaijan by 92%, in Kazakhstan by 41%, in Tajikistan by 19%, in Turkmenistan by 41% and in Uzbekistan by 12%.

For various reasons it is the intention of Uzbek authorities to continue reducing cotton planting area gradually until 2020, mainly in areas where field yields are lower than the country average, such as in highly salinized areas and mountain regions, and to promote production of other crops such as vegetables (particularly potatoes), fruits, and grains[[10]](#footnote-10). One important reason is the limited profitability of cotton cultivation during years when world market prices are low, in particular on salinized land.

Rainfed wheat is grown mainly in the northern regions of Kazakhstan where there are favourable weather conditions even though there is significant variation of yield from year to year. Three areas - Akmolinskaya, Kustanaiyskaya, and Northern Kazakhstan - account for about 80% of wheat acreage and 85% of the corresponding harvest.

# Economic integration and sub-regional cooperation

## Trade

Sub-regional cooperation in trade, notably if it follows certain agreed shared rules, has significant potential to contribute to sustainable development. The alternative is conflict and economic under-development. For the modernization of SPECA countries an integrated market in the sub-region is an important condition. Trade cooperation creates possibilities for division of labour, with investments in each country focusing on the production of commodities that can be sold throughout the region. Economic cooperation also reduces the risk of political instability, which in turn hold off potential investors.

The landlocked status of SPECA countries is an obstacle to trade and economic development but the sub-region has the advantage of being surrounded by dynamic economies with three of the BRICs neighbouring the region, and Turkey and the EU as important partners in the West. The Belt and Road Initiative (see below) could be a game-changer for transport and trade flows not only for its contribution to physical infrastructure but also for trade facilitation and other measures with a positive impact on trade.

With the close interdependence between agriculture, environment and sustainable development in the SPECA countries, this report has a focus on agricultural production and trade. Export as well as import volumes of agricultural products between 2005 and 2013 show a significant increase for all SPECA countries – except for exports from Tajikistan and Uzbekistan that reflect the declining cotton exports (FAOSTAT).

Kazakhstan and Kyrgyzstan are part of the Eurasian Economic Union (EEU) that rely on a relatively high common tariff policy vis-à-vis third countries to protect agriculture but with less barriers within the Union. But the EEU has not fully equalized the trade regimes and eliminated the internal Customs borders between its Member States (Kazakhstan and Kyrgyzstan among the SPECA countries), as per the initial intentions.

Kyrgyzstan became an EEU member in 2015 and while there are positive and negative effects, its trade within the Union has increased. Kyrgyz exports increased by 27.5% during the first 10 months of 2017 compared with the preceding year[[11]](#footnote-11).

Since 2015 Afghanistan, Kazakhstan, Kyrgyzstan, and Tajikistan are WTO members, while Azerbaijan and Uzbekistan are observers and acceding countries. Turkmenistan has not yet applied for accession to the WTO.

The CIS Free Trade Agreement is still in place for former Soviet republics and it has an impact as its trade rules are followed by the SPECA countries. Azerbaijan and Turkmenistan are not Parties to the Agreement.

The level of most favoured nation import tariffs is used as an indicator of openness to imports in the DESA-led work on an SDG indicator for achievement of SDG 17.10. Simple average MFN tariffs for agricultural products are highest in Uzbekistan. Kazakh and Tajik tariffs are intermediary, and Kyrgyzstan has a comparatively liberal regime when these four countries are compared (Mogilevskii and Akramov 2014).

The overall reduction of trade barriers among SPECA countries has contributed to increasing trade volumes but challenges remain: lack of confidence between the countries on the political level; memberships in different trade organizations; demanding administrative procedures; and difficult transport conditions including complicated border-crossing procedures. Procedural and regulatory barriers to international trade are the result of excessive, bureaucratic documentary requirements, legal and other non-tariff measures, procedures and practices, which may go beyond those needed for a rational level of protection for society (UNECE 2015). High transaction costs, often due to these barriers for trade and transport, is a significant burden for trade to and from the SPECA countries.

Barriers to trade include certain effects of sometimes overly strict requirements for compliance with regulations on health, veterinary and phytosanitary safety in import markets. The inability of Central Asian goods to comply with strict or unfamiliar requirements of other countries effectively limits exports including to traditional partners such as Russia.

According to the World Bank Trading across Borders indicator (World Bank 2018), most of the SPECA countries are ranked low on the ease of crossing international borders criterion: Afghanistan 175, Azerbaijan 83, Kazakhstan 123, Kyrgyzstan 84, Tajikistan 149, and Uzbekistan 168, out of 190 countries. There are some positive developments with regard to trade facilitation (World Bank 2018 report, including with contributions from UNECE).

It is not unusual that short-term political conflicts between SPECA countries influence trade and border crossing negatively. There are several cases where border-crossing and trade have been made more difficult for political reasons. The raised difficulty to cross the border between Kyrgyzstan and Kazakhstan in October 2017 in the aftermath of the Kyrgyz presidential elections is one recent example.

Cumbersome trade procedures, which should be streamlined through trade facilitation[[12]](#footnote-12), have a strong impact on the issues on which this study is focusing: improving trade practices to improve water, energy and environmental management. Trade facilitation can contribute in several ways: by cutting wasteful use of resources (human resources, time, paper, etc.), by introducing rules for efficient trade procedures and controls of abusive practices or by facilitating trade in green technologies and goods.

SPECA Governments often declare economic diversification as an important development objective, and specifically of diversifying their agricultural sector. One reason why diversification and innovation are slow is that high trade costs discourage farmers, potential foreign investors and others from identifying new products that could be produced and marketed competitively.

Responding to the questions of an OECD survey, conducted in 2014 (OECD 2015), Tajik farmers and exporters listed 24 barriers to the export of agricultural produce. The top five factors preventing export included: “too many documents are needed for export”; “it takes too many days to export”; “my product does not have a recognized certification of compliance”; “there is a lack of storage and distribution facilities for exports”; and “Government support for exports is weak”.

Recommendations from a UNECE study on regulatory and procedural barriers to trade in Kyrgyzstan (UNECE 2015) include combating four obstacles: procedural requirements; data and documentation requirements; lack of transparency; and unpredictability. Business processes need improvement in terms of rationalizing, streamlining and standardizing trade-related documentary requirements, developing the existing laboratories and conformity assessment bodies, and accelerating the speed of issuing certificates. Infrastructure development is also needed in the form of improved and increased warehousing facilities, roads and rail networks.

A possible positive direction for development can be China’s intention to revive the ancient Silk Road trade route under the Belt and Road initiative. The efforts to enhance regional connectivity focus on five areas of cooperation: infrastructure, trade, policy, finance and people. This initiative could be important for the regional cohesion and trade opportunities of SPECA countries perhaps also with respect to sustainable development. The “Green Silk Road Fund” has an explicit focus on investing in green sectors of the economy - such as renewable energy – and therefore has a potential to be a driver of a “green” transition (UNEP 2016b). Transport corridors and transit arrangements are bottle-necks that are also addressed by the Central Asian Regional Economic Cooperation (CAREC) organization.

In another positive development, in April 2015 Afghanistan, Tajikistan and Pakistan reached the final stage of negotiations of a trade agreement which will simplify transit between the countries. When implemented, such a transport corridor is likely to help increase the volume of regional trade and enhance foreign investments.

In conclusion, SPECA countries should continue strengthening sub-regional collaboration in trade and transport to support the SDGs, in parallel with their integration into the global rules-based system under the WTO. Further steps are needed for the predictability of trade regimes in agricultural and other products in the SPECA sub-region.

## Energy

Energy cooperation between SPECA countries has a great potential for improvement. Hydrocarbon pipe-lines are planned and constructed, but in the situation of volatile political relations and instability, national energy policy has frequently been directed towards self-sufficiency. In some countries national energy markets are highly regulated and protected, and electricity prices are low, which makes it difficult to cooperate and to attract international investments.

Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan have large reserves of oil and/or gas. Kazakhstan and Uzbekistan also have significant reserves of uranium. However, Kazakhstan, the world's top uranium producer, is cutting output of the commodity by 10% this year due to poor market conditions. Hydrocarbon poor Kyrgyzstan and Tajikistan depend on hydropower and are planning to develop new hydropower capacities.

High winter-production of hydropower upstream in the Aral Sea basin limits the access to irrigation water during the vegetation season downstream. For a more detailed description see the following section. In section 8c below ways to optimise energy-water cooperation are outlined.

The most obvious win-win step to strengthen energy cooperation among SPECA countries is to re-establish the Central Asia Electricity Grid. Current political developments seem to support this idea and technical preparations are underway for linking up the Uzbek and Tajik grids[[13]](#footnote-13). In addition, it is possible to link the whole sub-region with the Central Asia-South Asia power project, commonly known by the acronym CASA-1000. CASA-1000 is planned to allow for the export of summer surplus hydroelectricity from Tajikistan and Kyrgyzstan to Pakistan and Afghanistan.

Increased trade of hydrocarbons such as gas is likely to facilitate discussions on water management and there is some progress in this regard[[14]](#footnote-14). As is accounted for in section 8b, non-hydro renewable energy – wind and solar - could play a role in helping to achieve a better management of the water resources in the SPECA countries.

It is important to support trade in goods and technologies that contribute to the development of green technologies. The European Bank for Reconstruction and Development (EBRD), UNDP, the European Commission and other development partners work with relevant national agencies and institutions, including in Kazakhstan, the Kyrgyz Republic, and Uzbekistan, to develop production capabilities.

## Water management

The background of the current water problems in the Aral Sea Basin is the extensive development of irrigation to produce cotton for the needs of the former Soviet Union. After the 1960s, the irrigated area grew to 8 million hectares in the Aral Sea Basin, using practically the entire available flow of the Amu Darya and Syr Darya rivers. The disappearing Aral Sea is the most visible sign of an environmental disaster, which has its roots in those developments.

The area of irrigated land in SPECA countries is illustrated in Table 1. The highest acreages are found in Afghanistan and Uzbekistan. A low efficiency surface irrigation technology dominates with only minor areas under sprinkler or drip irrigation. Salinization of the soil from lack of drainage frequently forces farmers to apply ever-greater quantities of water to flush out the salt. Overall, with a mostly limited level of water infrastructure upkeep, there are severe losses of water in the canal supply systems. Surface irrigation can be made more efficient by levelling of land and improved on-farm water management, and alternative but more complex approaches such as drip irrigation increases water efficiency significantly. The costs for the farmers for irrigation water are generally too low to warrant the investments to achieve a more efficient use of the available water. Measuring the volume of water used by individual farmers is also a challenge. The frequent poverty of farmers makes it difficult to introduce economic instruments.

Only minor volumes of groundwater are used except for in Afghanistan. Decades of war have destroyed much of Afghanistan’s irrigation and other water supply systems that are vital for the agriculture, some of which have existed for centuries such as the open canal systems from the Hindu Kush to the dry lowlands. Available water resources are presently underused, including in the Aral Sea Basin. Pumping water for irrigation to higher altitudes is particularly common in Tajikistan and is also found in Uzbekistan and Turkmenistan. This method is energy-demanding but important for the livelihood in the countryside at high altitudes.

In the field of water management, the Central Asian countries need to tackle very specific water quantity and water quality issues. Water allocation among countries of the Aral Sea Basin is an issue of serious concern for the populations and economies of these countries, and is a central factor in international relations in the sub-region.

A few months after declaring their sovereignty, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan entered into their first regional agreement: the “Agreement on Cooperation in Joint Management, Use and Protection of Interstate Sources of Water Resources”, signed in February 1992. The 1992 Agreement confirmed the status quo of the Soviet water allocation arrangements between the countries until new modalities for water cooperation could be agreed on. The Interstate Commission for Water Coordination (ICWC) was established to implement the Agreement and has since been a stabilizing factor and focal point in the water allocation discussions on the Amu Darya and Syr Darya.

Since 1999, ICWC and another regional cooperation body, the Interstate Commission for Sustainable Development (ICSD), are parts of the International Fund for Saving the Aral Sea (IFAS), a key regional organization in Central Asia. IFAS is the only regional organization whose membership includes all five Central Asian States with Heads of States holding the post of IFAS President on a rotational basis.

The 1992 Agreement did not refer to energy cooperation even though as sovereign countries Kyrgyzstan and Tajikistan started to rely on hydropower as their only readily available source of energy. To generate electricity when needed in the winter Kyrgyzstan started to release more water from the Toktogul reservoirs in the Syr Darya basin. As a result of winter water releases, less water is available during the irrigation season and there are also incidents of flooding downstream.

As long as no effective solutions responding to upstream as well as downstream needs are in place, the population of the region bears the negative consequences, in particular during dry years/cold winters (World Bank 2004). Water consumption in Afghanistan is limited, but the development of irrigated farming in the basins of the Amu Darya’s tributaries is likely to increase. Climate change and the rapidly increasing population of SPECA countries are additional limiting factors. It is obvious that new innovative solutions are needed.

In the Syr Darya River Basin, an attempt was made to establish a mechanism to compensate the upstream countries for their losses in electric power production at their HPPs when applying irrigation mode of the operation of reservoirs. Kazakhstan, Kyrgyzstan and Uzbekistan signed in 1998 the Agreement on the use of water and energy resources in the Syr Darya Basin (Libert et al 2008). Tajikistan acceded to this Agreement a year later. However, the Agreement is presently not implemented. With time, the 1992 Agreement and the IFAS cooperation have become less efficient, and since 2016 Kyrgyzstan does not participate. Another problem is that Afghanistan is not participating in the Aral Sea Basin cooperation.

Upstream-downstream relations in the Aral Sea Basin was until recently very difficult and several attempts including from the international community to find solutions taking into account hydropower as well as irrigation interests were not accepted. The political situation has changed for the better and there is an improved dialogue on water issues (see section 8b).

The framework for transboundary water cooperation in Central Asia requires modernization and strengthening, and Afghanistan needs to be included in the cooperation. Cooperation further needs to address water quality and conservation of ecosystems, maintenance and safety of ageing hydro-technical facilities and the safety of tailings dams, measures to adapt to climate change, groundwater management and a number of other substantive issues.

There are great synergies to be found from sub-regional cooperation in the water sector. In a recent study the annual cost of inaction on water cooperation in Central Asia is estimated to 4.5 billion USD (Adelphi and CAREC 2017).

With its arid climate, Azerbaijan’s agriculture depends on irrigation with water from the transboundary rivers of Samur and Kura-Aras. While there is an agreement with Russia on the Samur river from 2010, there is no agreement on the Kura-Aras with the main upstream countries (Armenia, Georgia and Turkey). Negotiations of an agreement with Georgia is on-going. A recent report[[15]](#footnote-15) on present and future water use in the Kura-Aras Basin concludes that there are significant future constraints for water use in Azerbaijan. An increase of 21% of water use is estimated for 2035, while climate change will decrease water flows (Zinke and Toth 2017). The need for more efficient irrigation and other climate change adaptation measures is apparent.

## Intersectoral integration and sub-regional cooperation – the nexus example

Some of the ideas developed in this report stem from the recently finalised UNECE assessments of the water-food-energy-ecosystems nexus[[16]](#footnote-16) in the Syr Darya basin[[17]](#footnote-17) and in the Alazani/Ganykh basin[[18]](#footnote-18) shared by Azerbaijan and Georgia.

The specifics of understanding and exploiting synergies in the water-food-energy-ecosystems nexus were developed by UNECE using a participatory assessment process following a methodology developed under the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). Nexus assessments identify opportunities for intersectoral as well as sub-regional cooperation that are frequently not realised in the present reality of governance in and cooperation among SPECA countries.

The Syr Darya Basin, shared by Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, as well as the Alazani/Ganikh Basin, shared by Azerbaijan and Georgia, represent examples of an interlinked and often competing inter-sectoral and cross-border claims to common resources. Such claims contribute to real or likely tensions, but also to opportunities for optimizing the shared use of water, energy and food resources among SPECA countries.

The assessments´ main objectives were to foster transboundary cooperation by joint identification of inter-sectoral synergies and measures to reduce tensions; and assisting countries in their resource use optimization with an improved knowledge base and capacity. The assessment process for the Syr Darya Basin, which included a workshop for the identification of the main inter-sectoral issues and possible solutions, was detailed by a subsequent analysis that was followed by consultations with the various sectoral authorities concerned.

The Syr Darya nexus assessment includes recommendations related to trade policies:

* Development of a regional energy market and the exploration of opportunities for energy-water exchanges,
* The lowering of barriers to trading food and agricultural goods, thus promoting their more cost-, water- and energy-efficient production and exchange within the region.

More detailed conclusions from the nexus assessments are reflected in the cases elaborated in section 8 of this report.

The nexus assessments highlight the limited intersectoral policy analysis on the national level as well as weak inter-state cooperation between the involved SPECA countries. They demonstrate that an improved intersectoral cooperation on the national as well as inter-state levels would be beneficial for sustainable development.

# Food security

People are considered food secure when they have availability and adequate access at all times to sufficient, safe, nutritious food to maintain a healthy and active life. Food security analysts look at the combination of the following three main elements:

Food availability: Food must be available in sufficient quantities and on a consistent basis. It considers stock and production in a given area and the capacity to bring in food from elsewhere, through trade or aid.

Food access: People must be able to regularly acquire adequate quantities of food, through purchase, home production, barter, gifts, borrowing or food aid.

Food utilization: Consumed food must have a positive nutritional impact on people. It entails cooking, storage and hygiene practices, individuals‘ health, water and sanitation, feeding and sharing practices within the household.

According to FAO (2015) the prevalence of under-nourishment in Central Asia and Caucasus has decreased from more than 15% in 2000-2002 to ca 7% in 2014-2016. Most of the countries in the region reached the Millennium Development Goal hunger target of reducing by half the proportion of people affected by hunger. The region has also seen a steady decline of undernourishment since 2000. With some exceptions, food availability measured in average caloric availability is not of concern. While challenges remain, Tajikistan is making progress while the problem in Afghanistan is still serious with as many as 10 percent of the children being acutely malnourished[[19]](#footnote-19).

Despite the generally positive trends, the region as a whole—both rich and poor countries—suffers from malnutrition in the form of micronutrient deficiencies. The impact of malnutrition can be seen in the relatively high rates of stunting (low height for age) in children less than 5 years of age. Though underweight (low weight for age) and stunting (low height for age) levels have improved, the estimated stunting rate of 18% (2010) in the Caucasus and Central Asia countries is quite high. Around 41 percent of Afghan children under the age of five are stunted[[20]](#footnote-20). In some of the countries there is a high level of anaemia in children under 5 (FAO 2015).

The SPECA countries have a larger dependence on a single commodity—wheat—than other regions of the world that are vulnerable to food insecurity. The share of household expenditure devoted to food is also generally high and price fluctuations on international and regional markets have a powerful effect on the domestic food situation.

Food security is in some SPECA countries defined as “food independence” (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan), and in some of these as “food self-sufficiency” (Kazakhstan, Turkmenistan and Uzbekistan; FAO 2015). These countries have developed legislation, including laws and strategies, supporting these policies. To reach food independence support of producers has been introduced through subsidies for agricultural inputs. There is also limited support for consumers in the form of price regulation on bread or other staple products (Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan).

Despite dismantling the centrally planned system in the last decade of the last century, some of the SPECA countries in the “food self-sufficiency” group use a state commodity order system for government control over the sowing and procurement of ”strategic commodities”, and “directive indicators” encouraging production of certain agricultural products. Mainly wheat and cotton are supported. In Turkmenistan and Uzbekistan state support is delivered in the form of state-supplied inputs at discounted prices to farms fulfilling state orders.

As was noted in section 2 above, SDG 2 require the decrease of subsidies for agricultural production and trade notably if they negatively affect sustainable development.

Kazakhstan, as a member of WTO, has committed itself to limit support at 10% of the value of agricultural production. Seed and food subsidies are delivered primarily through the State Agro Corporation and locally managed food price control.

In Afghanistan close to 40% of the population is living below the poverty line. The core of the food security policy is the promotion of domestic food production and stable food imports (Afghanistan Food Security and Nutrition Agenda 2012).

One draw-back of the “food self-sufficiency” approach is a diversion of irrigation water away from high-value crops such as fruits and vegetables (as well as cotton) to wheat, a low-value[[21]](#footnote-21) crop.

The self-sufficiency policies are often superficial that do not get at the root of the problem of food security. They do not take into account the quality of nutrition, which has a long-term impact on the health of younger generations. Further, FAO stresses that the central aspect of the fight against food insecurity is to alleviate rural poverty (FAO 2015).

An alternative approach is to base food security on improving food availability through technical support to farms, improving access to food by the poor and thus ensuring a higher quality diet. This is the FAO approach to food security, as outlined in the World Food Summit Plan of Action. Azerbaijan has adopted policies that reflect this vision of food security, with a focus on improving food availability and access, and improving food safety and the nutritional state of the population. The socio-economic development program in the Republic of Azerbaijan in 2008-2015 aimed at ensuring food security and employment in the country through support to market-based agriculture, but did not apply import restrictions as part of food self-sufficiency policies. However, Azerbaijan still includes self-sufficiency in grain production as an element of its food security policy.

In an uncertain situation with regard to trade opportunities, the present-day food security policies of SPECA countries have contributed to improvements of food security. However, there are apparent trade-offs such as limited production of high-value crops on irrigated land. There are opportunities to rebalance crop production towards a higher value, such as decreasing wheat and rice production on irrigated land, without negative impact on food security. This rebalancing can be facilitated by more cooperation in regional trade. A more stable sub-regional trade regime can contribute to the food security requirements of the SPECA countries. This reasoning is further developed in section 8a.

# Trade patterns in agriculture

Central Asian cotton and Kazakh wheat production are highly competitive, and the agricultural trade of SPECA countries is dominated by these two commodities. With these exceptions, according to UNCOMTRADE[[22]](#footnote-22) there is limited Central Asian participation in global value chains of other agricultural products.

Sub-regional trade primarily consists of two streams: 1. Supplies of wheat grain and flour from Kazakhstan to other SPECA countries, and 2. Supplies of fruits and vegetables from southern Kyrgyzstan, Tajikistan and Uzbekistan to Kazakhstan (and Russia). The membership of Kyrgyzstan in the Eurasian Economic Union has boosted exports of certain products. For example, exports of onion and garlic to the Customs Union increased more than 6 times in 2017 compared to 2016[[23]](#footnote-23).

Afghanistan, Azerbaijan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan are all net importers of cereals, while Kazakhstan is a net exporter. Import volumes increased considerably between 2005 and 2013, as have exports from Kazakhstan. SPECA countries import increasing quantities of key commodities such as potato and sugar (FAOSTAT).

Proximity, an excellent railroad network, large efficient mills, low prices for high quality wheat, and supportive government policies are factors in the ability of the Kazakh milling industry to dominate wheat flour markets in the other SPECA countries. The quality of the Kazakh product is higher than wheat produced on irrigated land and is demanded for import.

Azerbaijan and Turkmenistan aim at self-sufficiency in wheat. Azerbaijan satisfies its demand for grains by as much as 70-80 percent through domestic production. The remaining demand is imported, mainly from Russia and Kazakhstan. While Turkmenistan uses much of its irrigated land for wheat production (Table 2), the country still depends on imports of high-quality wheat, while also exporting its own wheat to Afghanistan and Iran.

There is an increasing dependence on imported food in many SPECA countries and in 2000-2012 imports of agricultural products increased. A common feature of imports for all countries is that the proportion of prepared food has increased. From 2010 to 2012, Tajikistan spent 40% of its total export revenues on food imports (Mogilevskii and Akramov 2014).

While the cotton exports have decreased by over 50 % since the beginning of the 1990s, cotton remains a strategically important commodity for the three largest producing countries - Uzbekistan, Turkmenistan and Tajikistan. In Turkmenistan and Uzbekistan, the authorities are in charge of exports, and procurement prices paid to farmers are generally significantly lower than the prices on the international markets.

The agricultural trade with China is mainly cotton exports from Uzbekistan (a reorientation from exports to EU), and meat, fruit and prepared foods to Kazakhstan and Kyrgyzstan (Mogilevskii and Akramov 2014). Agricultural trade statistics from 2005 and 2014 shows that while trade has grown marginally between the SPECA countries, the most significant change is an increase of trade with China and decreased trade with EU.

Kyrgyzstan has had some success in accessing agricultural global value chains, importing know-how and inputs such as suitable seeds, and benefitting from foreign intermediaries with knowledge of export markets. With the introduction of new bean types, primarily from Turkey, the land devoted to bean production in Talas oblast increased from 5,000 hectares in 1999 to 45,000 hectares in 2012, as small-scale farmers became competitive producers supplying export markets in Turkey, Bulgaria and Russia. A combination of forces stimulated the technology transfer and investment from Turkey, but some degree of policy certainty related to WTO membership and liberal trade policies have surely helped (Pomfret 2014).

Because of instabilities in the relationship between countries, farmers are struggling to set up cultivation plans, as selling prices are very hard to predict. More stability and predictability in sales markets would help to improve agricultural production and markets in all SPECA countries.

Further, as noted in section 4a above, there are significant regulatory burdens causing costs and delays in the transit, import and export procedures for agricultural products in the SPECA countries that could be avoided. ESCAP (2015) carried out two business process analyses – export of processed fruit from Kyrgyzstan (before joining the Eurasian Economic Union) to Kazakhstan and of wheat from Kazakhstan to Azerbaijan. These studies resulted in recommendations for improved business processes. The first study suggests that business process re-engineering could lead to almost halving the time for the export procedures for processed fruit. The analysis suggested that Kyrgyzstan’s accession to the Customs Union would decrease the time to deliver processed fruits decreased by 13 days and save 1,200 USD per consignment. Several costly and delaying elements in the business processes were also identified for wheat exports to Azerbaijan.

Increased production and trade of high-value agricultural products is a significant opportunity for SPECA countries that would contribute to the achievement of SDGs. However, procedural and regulatory barriers and as a result high transaction costs, are a significant challenge for trade of such products.

# Case studies

The five case studies presented belowinvolve agricultural and other trade practices in the region, which are relevant for sustainable development, and which raise issues that can be efficiently addressed through review of national policies, cooperation between SPECA countries and with other regions. The cases indicate opportunities to develop the economy, provide food security and jobs, and at the same time promote an environmentally sustainable development. Each case builds on different backgrounds and reasoning, but these could all be implemented in parallel with possibilities of considerable synergies, in particular between cases a, c and e.

## Increased trade of low-value agricultural products

The self-sufficiency food security policy applied by several SPECA countries has advantages but leads in some cases to an inefficient use of water and irrigated land. While the trend of diversification of crops in the former mainly cotton production areas is a welcome development, production of wheat and other cereals on irrigated land have drawbacks. Irrigated rice and wheat display an average productivity of less than 0.2 and 0.1 US$/m3 of water, to be compared with the productivity of cotton estimated to about 0.5 US$/m3 water. Irrigated wheat production in Tajikistan, Turkmenistan and Uzbekistan has a “water footprint[[24]](#footnote-24)” in the range of 2000-4000 m3/ton. Wheat grown in northern Kazakhstan under rain-fed conditions has a water footprint of just 1400 m3/ton (Aldaya et al. 2010).

Wheat is the dominant staple in the Central Asia region, and wheat production and trade in SPECA countries is of central importance for food security. On average, per capita wheat consumption is 143 kg/year, with consumption in Afghanistan slightly above the regional average. In the low-income countries Afghanistan and Tajikistan, wheat consumption constitutes 66 percent and 49 percent of calories, respectively, of the local diets (FEWS Net 2016).

Among the SPECA countries Kazakhstan is the main producer of high-quality wheat on rainfed land. It is the world’s ninth largest producer – and seventh largest exporter – of wheat. The country is well integrated with global markets and supplied more than 80 percent of the exported wheat in Central Asia in 20011/12-2015/16. The most import-dependent country is Tajikistan, where the self-sufficiency ratio has not surpassed 0.6 in the last five years, followed by Uzbekistan, Kyrgyzstan and Afghanistan (self-sufficiency ratio 0.6-0.7). Turkmenistan produces more wheat than it consumes and has a self-sufficiency ratio of 1.4, but the country still imports high-quality wheat (FEWS Net 2016).

The importance of wheat as a staple product is the main reason why some SPECA countries actively support wheat production on irrigated land. Cereals, together with cotton, are the most cultivated crops on irrigated land in the Aral Sea Basin (See Table 2). Food security may have improved as a result of this policy, but wheat is a low-value crop and does not use the economic potential of irrigated agriculture. Wheat produced on irrigated land also tends to have a low quality. In some cases, it is so low that it is used as animal feed, while high-quality wheat is imported. But there is also a pricing issue. In peak periods of wheat prices, Tajik and Kyrgyz populations tend to revert to local wheat, which is cheaper (Peyrouse 2013).

Increased trade of crops such as wheat and rice, and their production in places where there are comparative advantages, may lead to water savings and the possible reallocation of water to irrigation of high-value crops or to support water eco-systems. SPECA countries should consider minimising production of irrigated crops that may be produced on rainfed land. Instead of irrigated winter wheat production in Azerbaijan, Turkmenistan or Uzbekistan, increasing imports from Kazakhstan or elsewhere is an alternative aligned with sustainable development. Kazakhstan is already the breadbasket of the sub-region but this role could be even strengthened.

Another factor is that cereal production on irrigated land in SPECA countries is characterised by a lower than potential yield. The cultivation can generally be intensified, with significantly higher harvests as a result. This could give opportunities to decrease acreages under irrigation but with equal or even higher production.

Rice is another low-value agricultural product produced on irrigated land in SPECA countries. Although there are local types of rice that are demanded in the region, imported rice produced elsewhere should be considered as a replacement. With restricted water resources available and a high rate of evaporation, Central Asia is not the ideal region for rice production. There are also differences between water requirements for rice production in the SPECA countries. Rice requires 7000 m3/ton in Turkmenistan, but would use half that amount of water if grown in less arid conditions and more clayey soils in Kyrgyzstan, Tajikistan or Kazakhstan (Aldaya et al. 2010). There is a trend of declining rice cultivation between 2005 and 2015 in the SPECA countries, except for in Kazakhstan and Tajikistan (Table 2).

There are alternative uses of irrigated agriculture for the production of higher-value products (see section 8c). Limiting the use of low-fertile, for example salinized irrigated land would also contribute to higher quantities of water for environmental flow and alleviate the competition for water allocation between countries.

This direction of changed production and increased trade of basic commodities would demand improved diplomatic and trade relations, as well as more efficient trade procedures to guarantee food security of individual countries.

## More efficient use of water for irrigation and energy

Centralized Soviet planning prioritised production of cotton in Central Asia. After the dissolution of the Soviet Union, the increase of hydropower generation during winter in the upstream countries had consequences for downstream access to water for irrigation in the major river systems of the sub-region. The effects of climate change lead to an increasing water use and is likely to limit water access and put even greater pressure on water-dependent sectors in SPECA countries.

The inter-sectoral and upstream-downstream challenges that have developed in the Aral Sea Basin over the past 25 years indicate that significant benefits can be reaped from a strengthened cooperation among the different sectors and countries. Improved relations between countries over the past year may lead to better opportunities to address these issues than only a year ago. An IFAS Summit on 24 August 2018 may give an additional positive impetus to water cooperation in the Aral Sea Basin.

There are technological solutions to address the challenges. Laser levelling of crop fields and local-scale water-efficient management save water so that more fibre and food can be produced with less water. Introduction of technologies such as drip-irrigation demands more investments but improves water use efficiency drastically.

Increasing overall energy efficiency in the countries and using cost-efficient alternatives or complementary technology for energy production would make upstream countries less dependent on hydropower potentially leading to improved access to water for agriculture downstream during the vegetation season.

The wind power potential in Kyrgyzstan and Tajikistan during winter is considerable and could add to the existing hydropower capacity, alleviating the deficit of irrigation water during summer. A preliminary assessment performed by UNECE confirms that wind power is sufficient for power production in some locations and that wind is consistently more powerful in winter during peak demand. A medium-term target of 500 MW wind turbines by 2030 could provide approximately 1.4 cubic km of water savings per year (about 10% of current operating storage volume in Toktogul HPP). With a firmly established wind component in the power plan, Kyrgyzstan and Tajikistan would be able to reduce vulnerability to drought cycles caused by climate change and maintain water reservoirs. Development of wind and solar power could address the trade-offs that emerge in the water-food-energy-environment nexus analysis (UNECE 2017), but with the low electricity tariffs in place finding investments for renewable energy may be difficult,

While politically difficult to implement, there are good opportunities to reform water and energy pricing to support a more rational use of water and energy resources and to generate financial resources to pay for infrastructure upkeep and modernization. A differentiated tariff for electricity in Kyrgyzstan introduced in 2015 indicates that economic instruments, while usually politically difficult to apply, can lead to significant energy savings (UNECE 2017). The UNECE water-food-energy-ecosystems nexus assessment of the Syr Darya basin presents specific solutions to balance water and energy use (UNECE 2017).

The application of energy efficiency measures would reduce the dependence on hydropower generation as well as import of electricity. The Syr Darya nexus assessment also suggests that revitalizing inter-state electricity trade (see section 4b), combined with energy efficiency measures, would allow for a reduction of investments in an expansion of hydropower generation. Low fuel prices for electricity generation in the downstream states can compensate for a deficit in seasonal electricity demand upstream via electricity trade.

The improved political dialogue in 2017-2018, in particular between Tajikistan and Kyrgyzstan on one side and Uzbekistan on the other, is very positive and may open up for a closer cooperation on energy and water. Frequent high-level visits between the countries have included discussions on strengthened cooperation, including on the construction of disputed new hydropower stations planned by Kyrgyzstan and Tajikistan.

This dialogue may open up for the re-establishment of the Central Asian Electricity Grid[[25]](#footnote-25). Exchange and trade of electricity between SPECA countries is a potential component of water cooperation contributing to a more balanced winter-summer release of water from upstream reservoirs in the Aral Sea basin. Excess summer electricity could be used in other parts of the SPECA sub-region, and also be exported to South Asia neighbours via the CASA-1000 transmission system.

Closer cooperation could pave the way for new transboundary water agreements in the Aral Sea Basin. Draft agreements on the Amu Darya and Syr Darya as well as proposals for a revised institutional framework have been developed and in the Aral Sea Basin Programme 4 developed under the Turkmen IFAS chairmanship specific plans are likely to be included.

Improved water use and energy efficiency would benefit from an increased trade of technologies and equipment, and a closer cooperation and exchange of experiences between SPECA countries. With similar irrigation systems established in the SPECA countries during Soviet times, cooperation to develop cost-efficient water efficiency measures offers good opportunities. Work has been done and experience is available for the further development of such cooperation. The Scientific-Information Centre of ICWC[[26]](#footnote-26) and other organizations in the region have gathered considerable experience on improving water efficiency in irrigation.

Mandated joint institutions in the Aral Sea Basin that bridge energy-environment-food issues are necessary for more efficient cooperation. IFAS presently does not cover the energy sector but it would be an advantage if its mandate could be broadened correspondingly. A proposal for institutional reform of IFAS involving the energy sector was developed in 2010 by UNECE[[27]](#footnote-27).

## Increased fruit and vegetable production for export

Many high-value fruits and vegetables are suitable for production on irrigated land in SPECA countries and there is a potential to produce and export such products in higher quantities than they currently do. Such crops could replace low-value products as described under A. above.

Fruit and vegetables are Afghanistan’s largest legal export item to India, Pakistan and Tajikistan that are Afghanistan’s top three trading partners[[28]](#footnote-28).

In January-July 2017, the export of fruit and vegetables from Azerbaijan grew by 62 percent in weight, compared to the same period of 2016. While Russia is a main importer, trade is also developing with China and the Middle East.

After Kyrgyzstan became member of the Eurasian Economic Union on 12 August 2015, there are clear indications that exports of vegetables and fruit from this country are increasing.

Tajikistan is one of the main producers of apricots, both fresh and dried, in Central Asia. The city of Isfara located in the Fergana valley, close to the borders with Kyrgyzstan and Uzbekistan, has become a hub for collecting, processing, packing and exporting dried apricots produced in the valley. As local (Tajik) production is not enough, traders import apricots produced and dried by farmers in neighbouring Uzbekistan and Kyrgyzstan and a cross-border supply chain is formed. Yet even in this simple supply chain, cross border trade is dominated by smuggling, in part due to the high costs, unclear or insufficiently developed regulation, and administrative difficulties for legal exports.

Tajik traders sort, pack and export apricots to the Russian market. The Tajik packing and exporting companies have a comparative advantage because the Russian authorities require specific documentation, and they have created distribution and marketing chains in Russia and Kazakhstan. Walter (2011) sees additional potential in the Tajik vegetable and fruit sector with Russia as the main market. Yet Kyrgyz membership of the Eurasian Economic Union has changed this situation, as this offers better conditions for Kyrgyzstan to play the role of a trade hub for further exports to Kazakhstan and Russia.

Private sector fruit and vegetable production is low in Turkmenistan and very little is exported. Two main reasons may be the very dry climate, and the competition with State enterprise planning for use of land.

Uzbekistan seems to have expanded land use for fruits[[29]](#footnote-29) and vegetables and there is evidence that some of this land is equipped with water-efficient drip-irrigation. As a result, in the last 10 years the production of vegetables and melons doubled, and fruit production more than doubled. The value of the corresponding exports increased five times between 2005 and 2015[[30]](#footnote-30).

In the replacement of crops that can be cultivated on rainfed land (such as wheat) by fruits and vegetables, water use per acreage may not decline. However, with a more intensive production less irrigated area may be needed to generate income and work places for the rural population. Establishment of fruit orchards can also include investment into drip irrigation equipment thus lowering water use significantly.

The SPECA countries are close to such major markets as Russia and China. Russia, with its traditional contacts with all SPECA countries, is one of the major importers worldwide of fruit and vegetables. With the boycott of food products from the EU and USA in 2014, there are increased opportunities for SPECA countries to develop their food trade with Russia. Kyrgyzstan, Tajikistan and Uzbekistan are already important exporters of fruit and vegetables to Kazakhstan but trade in the sub-region has a potential to increase if conditions for trade are improved.

The potential to develop production and trade further is considerable. But as fruits and vegetables are easily perishable commodities, the demand for fast transport and border crossing procedures is high. Presently bottle-necks hindering cross-border supply chains in the SPECA sub-region add a great deal of complexity to the process.

Key challenges for fruit and vegetable production for export beyond the transport infrastructure and export procedures are:

* Limited economies of scale
* Lack of information/knowledge on market access requirements
* Difficulties with quality assurance systems
* Lack of agreements on mutual acceptance of certificates

Much needs to be done with regard to production, storage and marketing to increase production and trade of fruits and vegetables. Consolidation of production and marketing is important as a basis for larger volumes and standardization. A strengthened transport infrastructure would facilitate the expansion of export markets for fresh produce. Measures to attract foreign investors would be positive to take advantage of the existing production potential.

Improved facilities to provide proper packaging and marking, and establishment of certified laboratories to avoid a second certification in import countries are needed. The production and exports of dried apricots can be taken as an example where expansion is possible. SPECA country producers have a comparative advantage in the production of higher value, clean biological products in comparison with other, larger global producers. International development partners could provide assistance in setting up certification laboratories and SPECA countries could strengthen sub-regional cooperation (e.g. in the Fergana Valley) for the joint use of the certification processes and facilities.

There is a strong demand for capacity building and learning at all levels – on production, standardization, storage, marketing, transport, and trade opportunities and rules. Identification of champions and exchange of experience within and between countries are needed.

In support of cross-border trade UNECE has organised two workshops in Tashkent: on Cross-Border Trade of Nuts and Dried Fruit in 2016, and on Cross-Border Trade of Fresh Fruits and Vegetables in 2017. These workshops covered central issues for the development of production and trade such as agri-food supply value chains, international standards and food safety requirements. Additional efforts in this direction would be very useful.

## Fish production and trade

Globally, fish and fish products are extensively traded food commodities. Increased export revenues can arise from the sustainable management of wild-capture fisheries, including through certification. The sale of certified fish products in developed countries has changed from a niche to a mainstream market.

In Central Asia, the main production centre of fish products used to be the Aral Sea. With the drying out of this major ecosystem, fisheries declined but have now started a new phase of development in the Northern Aral Sea[[31]](#footnote-31).

There are 47 750 km of irrigation canals between farms and 268 600 km on-farm, and 80 reservoirs of the Aral Sea catchment with a capacity of more than 100 million cubic metres. Some of these resources are already used for fisheries, but there are significant opportunities to increase production as well as trade in fish and fish products.

It is difficult to track development of fish trade in SPECA countries over time due to the limited general information available in the sub-region and also the different categories used in trade statistics. It is also not possible to track where fish are caught. 12,000 tons of frozen fish were exported while almost 28,000 tons were imported in 2015 in Kazakhstan. In the other countries exports and imports are significantly lower.

Fisheries rely on sufficiently available water resources of reasonable quality. From this perspective, upstream countries in Central Asia (Kyrgyzstan and Tajikistan) are better positioned to produce fish using their relatively less polluted water resources.

There is a general concern in Central Asia over low and declining water quality in Syr Darya as well as Amu Darya. The pressure on water resources by municipal sewage (treated and not treated), runoff from agriculture, industrial installations, illegal wastewater discharges, illegal disposal of household and industrial waste in river basins, tailings dams and dangerous landfills, are high. Poor water quality is a threat to health, in particular in downstream regions.

Formal, basin-wide cooperation on water quality is needed to develop a better understanding of the problem, to give a coherent picture to authorities and water users of the magnitude and sources of the problem, and to support decision-making.

For Azerbaijan, Kazakhstan and Turkmenistan, the Caspian Sea is a main source of valuable fish products, in particular sturgeon and caviar. More than 90 % of the world resources of sturgeon originate from the Caspian Sea. Loss of economic opportunity and social control of the fisheries, has led to widespread poaching by coastal inhabitants and great damage to Caspian fishery resources overall but especially to the sturgeon species. Reported data from Caspian States, excluding Iran, indicate that the official wild sturgeon catch has dropped from an average of about 22 000 tonnes a year in the 1970s to about 373 tonnes in 2008[[32]](#footnote-32).

On 12 August 2018, at a meeting in Aktau, Kazakhstan, the five Caspian riparian States agreed in principle on the distribution of the waters of this closed sea. They established 15-mile-wide territorial waters whose borders become state borders. Adjacent to the territorial waters are 10 miles of fishing water where each state has exclusive fishing rights.

No international agreement has been reached on the regulation of sturgeon catches among the countries bordering the Caspian Sea but the recent Aktau agreement may open up for improved cooperation also in this sector. Without an effective fishery management system with the associated control, monitoring and surveillance of fishing it will not be possible to rebuild the population as a basis for future economic activities.

Since 1998, international trade in all species of sturgeons is regulated under CITES[[33]](#footnote-33). CITES has set up a global initiative, including on sturgeon, based on the implementation of both trade and management measures. Currently, the international trade in sturgeon and sturgeon products, such as eggs for caviar, is only allowed when shipments are accompanied by the appropriate import and export certificates. However, there is a well-organized illegal catch and trade of the high-value product (Van Uhm and Siegel 2016). This limits the effectiveness of catch and export quotas as conservation measures.

It is an open question whether any subsidies to fisheries of other species are provided by Caspian Sea riparian States. SDG target 14:6 states that fishery subsidies which contribute to overcapacity and overfishing should be prohibited.

In the context of strengthened sub-regional cooperation on fisheries among SPECA countries, some important measures making sure that fish production is sustainable are:

* Adopting, implementing, improving and respecting effective fisheries management and conservation measures, such as output controls, input controls and auxiliary measures, using both market-based (certification) and command and control policies;
* Building monitoring, control and surveillance infrastructure;
* Introducing incentives to change the behaviour of consumers and economic operators;
* Creating protected areas in the Caspian Sea;
* Supporting sustainable small-scale fisheries;

In the case of sturgeon an additional measure is the production of farmed fish, not only for release in the wild but also for caviar and fish meat production. In Azerbaijan aquaculture activities for stocking waters that sustain commercial fisheries are state controlled, while activities in commercial fish farms became part of the private sector. However, there are questions raised of whether restocking is a good tool for sustaining fisheries (Salmonov et al 2013).

Fish is a fragile commodity for export if transported and delivered fresh. In a region where delays at borders are frequent, trade facilitation (notably implementation of the WTO Trade Facilitation Agreement and other agreements on facilitating the movement of perishable products) is needed for trade of fish and fish products to take off.

For the development of sustainable fisheries and trade in the SPECA countries there is an obvious link to regional cooperation on environmental protection. Sub-regional cooperation in Central Asia (notably the Aral Sea basin) on water quality as well as sustainability of fisheries and related biodiversity would open up future opportunities for trade and economic development. IFAS and its subordinated organizations such as ICSD could play a role for development of the sector from sustainability and marketing perspectives.

For the Caspian Sea riparian States the challenge is similar and a closer cooperation on fisheries under the Teheran Convention[[34]](#footnote-34) would be an opportunity. The main challenge here is how the five sturgeon species can be protected and populations strengthened as a basis for sustainable fisheries.

As part of its work on standards for trade facilitation, UN/CEFACT[[35]](#footnote-35) has developed the CEFACT FLUX standard and the tractability standard for fish.[[36]](#footnote-36) This Tractability Framework[[37]](#footnote-37) could provide a basis for sustainable trade of fish. CITES has a form of tractability, a labelling for caviar which is mandatory.

## Environmentally friendly agricultural production and trade

Innovative approaches to supporting agricultural production and trade aligned with the principles of sustainable development can open up important opportunities for the SPECA countries. Environmentally friendly agricultural production and trade, creating new and decent jobs, is an important prospect for the sub-region.

Most of the export of agricultural products from SPECA countries represents products such as cotton and wheat with commodity prices established on the international market. The greening of agriculture is a significant opportunity to increase production of high-value, niche products.

There is a problem of sustainability in agricultural production in the Aral Sea basin and it the cause of adverse environmental impacts, including the loss of biodiversity and ecosystem services, depletion and erosion of soil nutrients, increasing scarcity of freshwater, water pollution caused by poor nutrient management and pesticides. The disappearance of the Aral Sea is one of the most serious ecological tragedies in human history. Another example of a problem related to sustainability is child labour in the harvesting of cotton, which has tarnished the reputation of trade in agricultural products from Central Asia.

On the other hand, the level of input chemicals used – pesticides and fertilizers – is generally low[[38]](#footnote-38) in SPECA countries even if Tajikistan and Uzbekistan use comparatively high amounts of fertilisers per ha[[39]](#footnote-39). Small-scale and “out-of-date” production methods with little input use is well suited for organic production. Labour costs are comparatively low, which is of importance for growing high-value crops with restricted inputs of chemicals.

In many Western countries there is a premium paid for sustainably produced, organic products (including fruits and vegetables; UNEP 2016a), and some SPECA country producers are already finding a niche market for ecologically clean products. One example are the Uzbek dried apricots sold on German and Swiss markets.

The global market for certified organic food and beverage products reached US$ 80 billion in 2015 (Willer and Lernoud, 2016). This is a market that may offer high prices on products that SPECA countries can offer. If exporters can meet the international standards for food safety, and obtain the necessary certificates, there are opportunities to exploit available niches. Fair Trade certification is another opportunity for support of local farmers.

Increasing international competitiveness by greening agriculture is a possibility and the related opportunities include:

* Accessing sustainable global supply chains, particularly through business-to-business certification of sustainable farming practices;
* Creating new markets for sustainably produced crops and responding to consumer demand for sustainably produced products;
* Exporting organic or fair-trade products, and
* Providing agro-tourism services.

There are different aspects characteristic of green agriculture such as locally adaptable sets of agricultural techniques, practices and market branding certifications, organic farming, fair trade, conservation farming, precision farming and integrated pest management[[40]](#footnote-40).

There are some principal steps to be taken in the development of a more environmentally friendly agriculture. Getting rid of questionable subsidies[[41]](#footnote-41) is a first step. A particularly important field of action for SPECA countries is to improve efficiency of water use for irrigation (see section 8b). Higher and better regulated payment for irrigation water is politically and technically difficult to introduce, but would have a considerable effect on water use efficiency.

To develop profitable organic agriculture it is important to create, maintain and enforce a strict domestic regime. Carefully crafted environmental rules and regulations addressing risk management help strengthen private sector capacity. It is important to facilitate access to and awareness of certification services, build capabilities of domestic companies to meet voluntary standards and legal requirements in export markets, and support technical assistance and capacity building programmes.

Challenges in certification include the need for substantial start-up capital, and additional time and skills requirements. The decision to shift to more sustainable trade practices is often based on short-term price signals but there should be more realistic expectations for long-term profitability. Certification is hampered by a lack of knowledge of standards, a lack of appropriate financial facilitating mechanisms for small-scale producers, and a lack of effective market linkages between small producers and international buyers.

In addition to following the international standards, an improvement of the general perception of SPECA countries in the international arena as an agricultural region would be desirable. This is a difficult challenge and would benefit from close cooperation and a common long-term strategy developed by SPECA countries.

Some progress can be noted. Organic farming in Azerbaijan began with the adoption of a State Program in 2009. In Kazakhstan, a new law on organic agriculture that outlines the institutional and regulatory framework for organic food production was signed in 2015. Organic production is a development priority for Kazakhstan and part of its “green economy” initiative emphasizing efficient use of water, land and biological diversity.

Work is on-going, including with the support of international organizations, to promote organic farming in the SPECA countries. A two-year, FAO project "Supporting the development of organic farming and institutional capacity building in Kazakhstan" was launched in 2015. In 2017 an International Conference on development of organic agriculture in Central Asia was organised in Tashkent[[42]](#footnote-42). However, organic farming as an alternative agriculture production method is still commonly unknown in SPECA countries.

An additional opportunity for the SPECA countries is to build production and marketing on a “biodiversity” based platform. A best practice example for this can be found in Peru, another biodiversity centre of the world, where the sustainable trade potential of native products has been developed (UNEP 2015).

The framework of BioTrade was established on the initiative of UNCTAD in 1996. It identified seven principles which can be applied in different contexts. The aim of applying these principles is to conserve biodiversity through its sustainable use. Under the BioTrade model, benefits generated by the use of biodiversity are shared equitably throughout the supply chain, while at the same time, negative environmental impacts associated with the use of biodiversity are reduced or eliminated. For a biodiverse region like SPECA, the initiative represents an opportunity to commercialize and export biodiversity-based native products in a more efficient and sustainable way while generating additional revenue to benefit the producers (rather than intermediaries and retailors in the target countries for exports). In the case of SPECA countries, work is needed to identify possible products for such targeted support of sustainable trade. Apple, pistachio and garlic are examples of domesticated plants that have originated in Central Asia.

Another opportunity is the cultivation, collection and trade in medicinal plants and plant parts. This is an expanding area for trade,. Yet sustainable production is not well developed in the SPECA countries. In Uzbekistan, GIZ[[43]](#footnote-43) has introduced pilot plantations of sea buckthorn. With this crop, local people can earn additional income by producing raw materials for pharmaceutical purposes, and by selling fruits and sea buckthorn oil.

A major problem for SPECA countries is the lacking marketing, trade infrastructure and human capacity. The difficulty to initiate and build appropriate organizations, companies and structures is an important reason for seeking policy reform and external technical support.

Development of cooperation between regional and international companies and local producers needs to be promoted on the basis of long-term commitments. Grouping of small-scale suppliers into associations and establishing public–private partnerships is likely to create a more balanced relationship between stakeholders, and promote beneficial actions and investments.

Developing a more favourable situation for green or organic agriculture in the SPECA countries is a difficult task which necessitates top-down as well as bottom-up approaches. The centralized regulation of agriculture in some SPECA countries is a problem for the bottom-up consolidation needed for certification, marketing and trade of specialised products. The main challenges are to strengthen farmers´ understanding and skills, and at the same time facilitate appropriate market and trade conditions. Clarity and control of maximum residue limits of pesticides and product traceability are additional demands. For specific recommendations on green agricultural production and certification see UNEP (2013).

Development and support of virtual and real-life market places for organic and similar products should be promoted and could be a joint undertaking by SPECA countries.

# Conclusions and recommendations

The case studies accounted for in section 8 suggest that given the right policies on national and sub-regional levels are in place, there can be significant advancements towards SDG implementation and the development of a green economy. There is a wide range of possibilities on different levels to facilitate progress with regard to the five cases described in this report. This concluding section will suggest selected measures for further discussion.

It is a significant challenge that effective policy-development needs to involve two or more sectors. For example, there are potential synergies between trade policy development and cooperation, and policy changes in the agricultural and food security sectors (case studies 8a and 8c). Another example is that development of regional energy cooperation would benefit from being part of cooperation in the water/irrigation sector (case study 8b).

Development partners and international organizations have a continued interest to support projects on trade in the sub-region. These institutions can play a significant role in promoting the SDGs, inter alia, by increasing the analysis of issues related to sustainable development and trade, and of considerations related to trade financing.

Many of the measures listed below are part of on-going efforts in trade, agriculture, environment, infrastructure sectors that need to be strengthened while others, including those related to specific case studies, are not yet pursued. It is suggested that the following recommendations for joint and national work is considered.

## General measures

1. Abide by established trade rules

Among SPECA countries there are several examples of serious disturbances of trade elicited by disagreements in other aspects of diplomatic relations. For the stable and sustainable development of economy, security and political relations a long-term view is recommended and agreed-on present and future trade relations should not be undermined by political, short-term conflicts. This reflects the application of SDG 17, target 10 (“Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda”) but also regional trade rules and rules for sustainable trade.

1. Eliminate procedural and regulatory barriers to trade

Excessive, bureaucratic documentary requirements, legal and other non-tariff measures, procedures and practices, constitute barriers to international trade that lead to high transaction costs, and is a significant burden for trade to and from the SPECA countries. Work is on-going on various levels to decrease the waste of resources that these barriers incur, including in the framework of WTO (notably on implementing the WTO Trade Facilitation Agreement) and of the Eurasian Economic Union. SPECA countries should be proactive in continued work to eliminate such barriers. A typical example is simplification of border-crossing and transport procedures for perishable goods.

1. Activate trade facilitation

Trade procedures are in many cases complicated and even set up to protect specific markets. Trade facilitation should continue to be a key area for cooperation in the SPECA framework, and it should be aligned even further with the efforts to support sustainable development. Trade facilitation has the potential to save resources such as people’s time and efforts that are wasted in unnecessary bureaucratic procedures and documentary exchange; as well as financial and material resources, which are lost in processes with no or little value added for the quality of official controls of goods. Trade facilitation can also be focused on facilitating the movement of environmentally friendly products and technologies, or areas of production that support the creation of high-quality jobs. Automation of trade information exchange, the use of electronic certificates for agricultural trade, which follow international standards and are recognized among the countries, will help improve regional cooperation and regional trade by saving time and resources (including human).

1. Improve transport infrastructure networks

There are on-going investments in transport infrastructure, east-west and north-south crossing the SPECA subregion as a traditional transit region, and initiatives to revive the ancient Silk Road that are likely to have a positive impact for development and trade. However, more cooperation is needed between SPECA countries to improve roads, railways and border crossings, in order to provide sustainable transport linkages and enable the local economy.

1. Promote market relations including in agriculture

Strengthening of free market relations are beneficial as the identification and growth of specific niches of production and trade tend to be more efficiently built on private initiatives. There are positive developments in several SPECA countries, but problems such as those described in this report remain. The efforts to build market economies, fostering innovative solutions should be strengthened.

1. Promote the professional understanding and dialogue on trade, green economy and sustainable development

The SPECA countries could consider establishing sections on sustainable trade in their Ministry of Trade or Ministry for Foreign Affairs as a means towards increasing the understanding and identifying opportunities in this area. As an alternative, expertise can be established in universities or other institutions. Expert work on sustainable trade should be integrated with national initiatives on green economy or sustainable development.

A dialogue between SPECA countries on trade, green economy and sustainable development should further be initiated. SPECA countries could work together in the framework of the Green Bridge initiative and/or ICSD, and in cooperation with UNECE and UN Environment to define practical efforts in support of the Pan-European Strategic Framework for Greening the Economy (BIG-E).

1. Conduct environmental assessments for trade policies and agreements, as well as other policy initiatives

Strategic environmental assessment is a powerful tool to analyse effects of policy development including on environmental aspects of sustainable development. The implementation of the Protocol on Strategic Environmental Assessment under the UNECE Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) gives valuable experience on advantages and how this can be done in practice.

1. Develop a comparative study of agricultural production, marketing and trade

The structure and regulation of production are key areas for development in agriculture. The SPECA countries have very different approaches, and it would be of interest for future policy-making to make a comparative study of the development of agricultural production, marketing and trade.

## B. Increased trade of low-value agricultural products

1. Review food security policies

SPECA countries should review national food security policies in those cases where these policies hinder trade of sustainably produced agricultural products. As is shown in cases 8a, 8c and 8e above there are alternatives to low-value production of for example wheat on irrigated land. Decreasing the focus on self-sufficiency would open up for saving of water and production of more valuable products with potential positive effects on the economy as well as the environment.

## C. More efficient use of water for irrigation and energy

1. Negotiate basin-wide/sub-regional cooperation agreements for water management and use

In the Aral Sea as well as the Kura Basins there is a need to strengthen transboundary water cooperation and the positive political relations offer opportunities for further development. Well-conceived and negotiated agreements, notably with the involvement of Afghanistan in the Aral Sea Basin, have the potential to safeguard irrigation as well as energy production. Linking cross-border environmental agreements and trade liberalization agreements may provide further opportunities. Protection of water-related eco-systems as well as water quality are important factors in new agreements. Involving irrigation, environment, energy and other sectors in such negotiations is a necessary condition for sustainable solutions to be reflected in new agreements.

1. Develop national policies for improved efficiency of water use and energy

There is a need to develop and test politically acceptable national policies to achieve better water and energy efficiency. Water and energy pricing are important instruments and various options should be analysed and tested. For water efficiency key instruments are strengthened training and advisory services for farmers, as well as research.

1. Re-establish the Central Asian Electricity Grid

A more regular exchange and trade of electricity in Central Asia is an important component of water cooperation that is likely to contribute to a more balanced winter-summer release of water from upstream reservoirs in the Aral Sea basin. The re-establishment of the Central Asian electricity grid that is presently on-going opens up the opportunities to use available energy more efficiently by supporting trade and exchange between the involved countries.

1. Review opportunities for investments in wind and solar energy

The wind power potential in Kyrgyzstan and Tajikistan during winter could add to the existing hydropower capacity, and alleviate deficit of winter energy deficiency as well as lack of irrigation water during summer. In general, investments in wind and solar power may be difficult to finance, but cost-efficient opportunities should be examined and pursued.

1. Strengthen technical cooperation on water management and infrastructure

With the on-going climate change, improved management of irrigation is a condition for future sustainable production and trade in agricultural products. As the irrigation systems established in most of the SPECA countries during Soviet times are similar, cooperation to develop cost-efficient measures to improve water efficiency is an important opportunity. There is already a certain level of experience exchange between water experts in Central Asia and among SPECA countries. This joint work can be strengthened by instituting working groups on issues such as optimisation of irrigation, cost-efficient approaches towards decreasing water losses, etc. This cooperation could be developed in the IFAS framework. Opportunities for cooperation on the production of equipment for improved irrigation and maintenance of irrigation systems may be considered as part of the joint work.

1. Joint investments in water infrastructure

In view of the on-going climate change it is timely to evaluate opportunities for joint investments in new and already existing water infrastructure. Multi-year storage capacities in upstream countries, to serve the interests of the whole region, could be developed and financed jointly with positive effects for the irrigation as well as the energy sectors.

## D. Increased fruit and vegetable production for export

1. Establishment of certification laboratories

Establishment of certified laboratories to avoid a second certification in import countries are needed. International development partners could provide assistance in setting up such laboratories and SPECA countries could strengthen sub-regional cooperation for the coordinated application of the certification process.

1. Joint capacity building and establishment of partnerships for trade of agricultural high-value, including organic products

Partnerships, cooperatives and other cooperation frameworks are crucial to develop capacity for marketing, storage, transport and trade of high-value agricultural products, including for organic products. There are limited opportunities to share experiences related to eco-labelling and sustainability standards and “Champions” that have practical experience are particularly important for inspiration and capacity building. The SPECA Trade Working Group could play an important role and a starting point may be a sustainable trade seminar organised by ESCAP and UNECE back-to-back with a regular Working Group meeting. Jointly SPECA countries could develop, in cooperation with ESCAP, UNECE, UN Environment and FAO, a broader capacity building and partnership project that would also deal with ecological/organic production.

## Fish production and trade

1. Basin-wide cooperation on water ecosystems and water quality

Cooperation among Aral Sea Basin and Caspian Sea Riparians on water ecosystems and water quality need to be strengthened to develop a better understanding of the problem, and give a coherent picture for authorities and water users of the magnitude and sources of the problem in support of decision-making. IFAS and its subordinated organizations such as ICSD, and the Teheran Convention are suitable platforms for this work.

1. Development of cooperation on fisheries and fish populations

For the challenge of fisheries and fish population Caspian Sea Riparians are recommended to intensify cooperation under the Teheran Convention. Similar work in the Aral Sea Basin could be developed in the framework of IFAS. This work could include, not only agreeing on regulations, monitoring and tractability standards (for example the CEFACT Tractability Standard), but also development of strategies and technologies to improve and stabilise fish populations. The countries may work with international development partners for the further development of sturgeon farming instead of catching wild fish, the protection of which may be strengthened.

## Environmentally friendly agricultural production and trade

1. Support to production and market development for organic products

SPECA countries should review opportunities of national agricultural and trade policies for support of production and trade of organic products, and also medicinal plants. For example, the development of virtual and real-life market places for organic and similar products should be promoted and could be a joint SPECA effort.

The recommendation no 17 above is also relevant for this case.

In conclusion, there is a multitude of fronts where sustainable trade can be promoted. This version of the report proposes a number of alternatives for discussion. The author and UNECE are grateful for feedback to improve the report in its final version.

# References

Afghanistan Food Security and Nutrition Agenda. 2012. Policy Statement on Food and Nutrition Security by the Government of the Islamic Republic of Afghanistan. Available at http://extwprlegs1.fao.org/docs/pdf/afg152445.pdf

Aldaya, M., Muñoz, G. and Hoekstra, A. 2010. Water Footprint Of Cotton, Wheat And Rice Production In Central Asia, Value Of Water Research Report Series No. 41

Adelphi and CAREC. 2017. Rethinking Water in Central Asia: the Costs of Inaction and Benefits of Water Cooperation. Swiss Agency for Development and Cooperation SDC

CAWaterInfo. 2017. Database. Available at http://cawater-info.net.

Dukhovnyi, V, Mukhamedzhanov, Sh and Saidov R. 2017. Oroshenie I drenazh v stranakh Tsentralnoi Azii, Kavkaza I Vostochnoi Evropy. SIC-ICWC, Tashkent

ESCAP. 2015. Trade Process Analysis for the Selected Central Asian Countries. Available at: http://www.unescap.org/resources/business-process-analysis-trade-procedures-selected-central-asian-countries

FAO. 2013. Irrigation in Central Asia in figures AQUASTAT Survey-2012. FAO Water Reports, Rome.

FAO. 2015. Regional Overview of Food Insecurity Europe and Central Asia. Rome.

FEWS Net 2016. REGIONAL WHEAT MARKET FUNDAMENTALS Central Asia

Lerman, Z. and Sedik, D. 2009. Agricultural Recovery and Individual Land Tenure: Lessons from Central Asia. Policy Studies on Rural Transition No. 2009-3, FAO, Available at: <http://www.fao.org/3/a-aq335e.pdf>

Libert, B. Orolbaev, E. and Steklov Y. 2008. Water and energy crisis in Central Asia. China and Eurasia Forum Quarterly, Volume 6

Mogilevskii, R, and Akramov, K. 2014. Trade in Agricultural and Food Products in Central Asia. University of Central Asia, Working Paper no 27

OECD. 2015. Private Sector Development. Policy Handbook - Increasing Exports in Tajikistan. The Case of Agribusiness, Paris

Pomfret, R. 2014. Trade costs and agricultural trade in Central Asia. Discussion Paper, the Leibniz Institute of Agricultural Development in Transition Economies

Peyrouse, S. 2013 Food Security in Central Asia A PUBLIC POLICY CHALLENGE. PONARS Eurasia Policy Memo No. 300

Rieter. 2015. Country Report Central Asia - The textile industry in Central Asia increasing its spinning capacity. Winterthur, Switzerland

Salmonov, Z., Quasimov, A., Fersoy, H and van Anrooy, R. 2013. Fisheries and aquaculture in the Republic of Azerbaijan. FAO Fisheries and Aquaculture Circular No. 1030/4, Ankara

Turral, H, Burke, J and Faures J-M. 2011. Climate change, water and food security. FAO Water Reports 36, Rome

UNECE. 2015. Regulatory and Procedural Barriers to Trade in Kyrgyzstan, Geneva, available at http://www.unece.org/fileadmin/DAM/trade/Publications/ECE\_TRADE\_412E-Kyrgyzstan.pdf

UNECE. 2017. Reconciling resource uses in transboundary basins: assessment of the water-food-energy-ecosystems nexus in the Syr Darya River Basin. Geneva. Available at http://www.unece.org/index.php?id=45042

UNEP. 2013. Green Economy and Trade – Trends, Challenges and Opportunities.

UNEP. 2015. Peru’s Sustainable Trade Potential: Biodiversity-based Products. Available at http://www.unep.org/greeneconomy/GreenEconomyandTrade

UNEP. 2016a. Green Economy and Trade Opportunities Project: Synthesis Report. Geneva

UNEP. 2016b. Stocktaking on Inclusive Green Economy in Central Asia And Mongolia: A Sub-Regional Perspective.

van Uhm, D and Siegel, D. 2016. The illegal trade in black caviar. Trends Organ Crim 19

Willer, H. and Lernoud, J. 2016. Organic Agriculture Worldwide 2016: Current Statistics. BIOFACH 2016, 10.2.2016

World Bank. 2004. Water energy nexus in Central Asia improving regional cooperation in the Syr Darya Basin, Washington, DC: World Bank. Available at http://siteresources.worldbank.org/INTUZBEKISTAN/Resources/Water\_Energy\_Nexus\_final.pdf

World Bank. 2018. Doing Business 2018: Reforming to Create Jobs, Washington, DC: World Bank. Available at <http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB2018-Full-Report.pdf>

Zinke, A. and Tóth, K., 2017. Historic Water Use, Projected Water Demand and Water Status in the Kura River Basin (not published)

1. <http://www.unece.org/fileadmin/DAM/SPECA/documents/we_and_environment/20th_session_of_the_SPECA_WG_on_WEE_Report_ENGLISH_October_2016.pdf> [↑](#footnote-ref-1)
2. Green Economy are defined in UNECE documents as: “…. an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”

   See further www.unece.org/sustainable-development/green-economy/what-does-green-economy-mean.html. [↑](#footnote-ref-2)
3. www.unep.org/trade [↑](#footnote-ref-3)
4. The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, or Aarhus Convention, is a mechanism to be applied where there is a concern for environmental issues. [↑](#footnote-ref-4)
5. https://www.azernews.az/region/120973.html [↑](#footnote-ref-5)
6. https://atlas.media.mit.edu/en/profile/country/uzb/ [↑](#footnote-ref-6)
7. For later years statistics are less complete. [↑](#footnote-ref-7)
8. World Bank Statistics [↑](#footnote-ref-8)
9. https://atlas.media.mit.edu/en/profile/country/uzb/ [↑](#footnote-ref-9)
10. https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual\_Tashkent\_Uzbekistan%20-%20Republic%20of\_3-30-2017.pdf [↑](#footnote-ref-10)
11. https://www.akchabar.kg/news/eksport-kyrgyzstanskih-tovarov-v-eaes-vyros-na-275/ [↑](#footnote-ref-11)
12. The primary goal of trade facilitation is to help make trade across borders (imports and exports) faster, and cheaper and more predictable, whilst ensuring its safety and security. In terms of focus, it is about simplifying and harmonizing formalities, procedures, and the related exchange of information and documents between the various partners in the supply chain. For further explanations see http://tfig.unece.org/details.html. [↑](#footnote-ref-12)
13. https://news.tj/ru/news/tajikistan/economic/20171108/uzbekistan-gotov-k-parallelnoi-rabote-s-energosistemoi-tadzhikistana [↑](#footnote-ref-13)
14. https://news.tj/ru/news/tajikistan/economic/20171107/v-tadzhikistan-pridet-uzbekskii-gaz [↑](#footnote-ref-14)
15. Zinke and Tóth, 2017. Historic Water Use, Projected Water Demand and Water Status in the Kura River Basin (not published) [↑](#footnote-ref-15)
16. The nexus term in the context of water, food (agriculture) and energy refers to these sectors being inextricably linked so that actions in one area commonly have impacts on the others, as well as on ecosystems. [↑](#footnote-ref-16)
17. http://www.unece.org/index.php?id=42929 [↑](#footnote-ref-17)
18. http://www.unece.org/index.php?id=42935 [↑](#footnote-ref-18)
19. http://www1.wfp.org/countries/afghanistan [↑](#footnote-ref-19)
20. http://www1.wfp.org/countries/afghanistan [↑](#footnote-ref-20)
21. One important aspect of wheat as a ”low-value” crop is that this crop is usually grown on rainfed arable land where less investments and inputs are needed for cultivation. [↑](#footnote-ref-21)
22. https://comtrade.un.org/ [↑](#footnote-ref-22)
23. https://www.akchabar.kg/news/eksport-kyrgyzstanskih-tovarov-v-eaes-vyros-na-275/ [↑](#footnote-ref-23)
24. The concept of the ‘water footprint’ has been proposed as an alternative indicator of water use, which looks at consumptive water use instead of water withdrawals. Looking at consumptive, i.e. evaporative water use is more relevant than considering water withdrawals, because parts of the water withdrawals return to the water bodies where they were taken from, so these parts can be reused [↑](#footnote-ref-24)
25. http://www.eurasianet.org/node/84136 [↑](#footnote-ref-25)
26. SIC-ICWC, see http://www.cawater-info.net/library/iwrm\_e.htm [↑](#footnote-ref-26)
27. http://www.unece.org/fileadmin/DAM/env/water/cadialogue/docs/Draft\_Paper\_united\_FINAL\_ENG.pdf [↑](#footnote-ref-27)
28. CIA World Factbook - Afghanistan [↑](#footnote-ref-28)
29. While there is information that fruit orchards in Uzbekistan expanded significantly from 2016, statistics from 2005 and 2015 indicate a decrease between the latter years. [↑](#footnote-ref-29)
30. Presentation by Dilshob Akbarov, UNDP, UNECE Workshop Tashkent 2016, https://www.unece.org/index.php?id=42531 [↑](#footnote-ref-30)
31. The Northern Aral Sea in Kazakhstan is fed by the Syr Darya river and its level supported by the Kokaral dyke. [↑](#footnote-ref-31)
32. http://old.grida.no/graphicslib/detail/trade-in-sturgeon-caviar-huso-huso\_5b7c [↑](#footnote-ref-32)
33. Convention on International Trade of Endangered Species of Fauna and Flora [↑](#footnote-ref-33)
34. Framework Convention for the Protection of the Marine Environment of the Caspian Sea [↑](#footnote-ref-34)
35. The UN Centre for Trade Facilitation and Electronic Business [↑](#footnote-ref-35)
36. https://www.unece.org/info/media/presscurrent-press-h/trade/2016/uncefact-adopts-the-flux-standard-for-sustainable-fisheries-management/doc.html [↑](#footnote-ref-36)
37. http://www.unece.org/index.php?id=43763 [↑](#footnote-ref-37)
38. Comparative figures for pesticides are difficult to obtain but the indications are strong that pesticide use is very low in SPECA countries compared to other countries. See <https://www.unece.org/index.php?id=32303>, presentation on pesticide questionnaire. [↑](#footnote-ref-38)
39. https://data.worldbank.org/indicator/AG.CON.FERT.ZS?end=2014&start=2012 [↑](#footnote-ref-39)
40. One issue not raised in this report is the potential to increase carbon sequestration in the soil as a measure for climate change mitigation. Improved carbon sequestration is mainly achieved through changes to good agricultural practice. [↑](#footnote-ref-40)
41. The issue of subsidies in agriculture is very complex as these significantly influence world market prices. In this case agricultural input subsidies are referred to. Changing environmentally harmful subsidies towards supporting more sustainable agricultural practises is a key element of greening the economy. Internationally, government support for agriculture increasingly involves direct payments for environmental services or compensation to farmers for avoiding activities that could affect groundwater or biodiversity. [↑](#footnote-ref-41)
42. http://www.fao.org/europe/events/detail-events/en/c/1026543/ [↑](#footnote-ref-42)
43. Deutsche Gesellschaft für Internationale Zusammenarbeit [↑](#footnote-ref-43)