	ENSURE PROJECT *Contract n° 212045*

ENSURE E-LERNING TOOL

F15

Structuring social and economic vulnerabilities

The project is financed by the European Commission by
the Seventh Framework Programme
Area “Environment”
Activity 6.1 “Climate Change, Pollution and Risks”

Reference reports:

Del. 2.1: Relations between different types of social and economic vulnerability (chap 3)

creative commons

COMMONS DEED

Attribution-NonCommercial-ShareAlike 2.5

You are free:

- to copy, distribute, display, and perform the work
- to make derivative works

Under the following conditions:

Attribution. You must attribute the work in the manner specified by the author or licensor.

Noncommercial. You may not use this work for commercial purposes.

Share Alike. If you alter, transform, or build upon this work, you may distribute the resulting work only under a license identical to this one.

- For any reuse or distribution, you must make clear to others the license terms of this work.
- Any of these conditions can be waived if you get permission from the copyright holder.

Your fair use and other rights are in no way affected by the above.

Table of contents

See References in ENSURE Deliverable 2.1

1 Objective

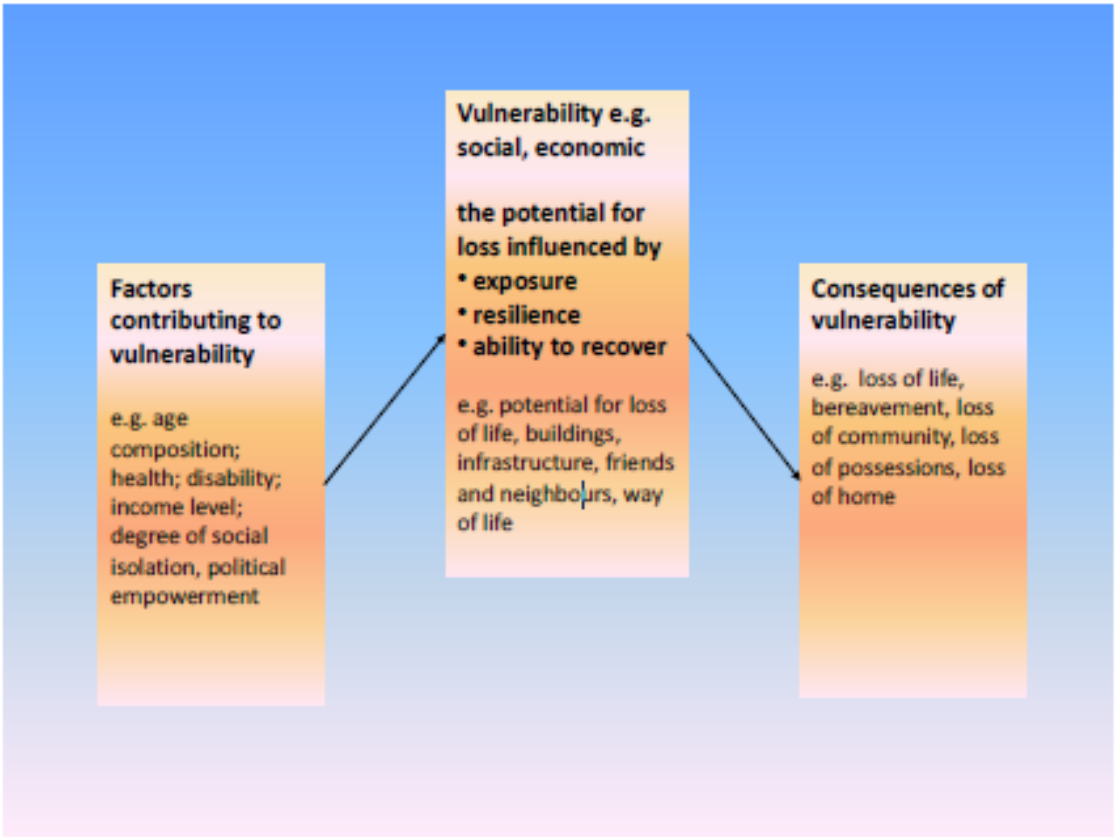
The objective of this document is to identify approaches by which social vulnerability and economic vulnerability may be meaningfully structured as a precursor for exploring and identifying the two-way relationships which exist between them.

An important distinction needs to be made between social or economic factors, and social or economic vulnerability, and consequences of vulnerability (Figure 1). Many social, economic and institutional factors may influence and increase or reduce vulnerability, but this does not mean that these factors are vulnerability itself. However, social factors such as age might be associated with economic and social vulnerability. For example, in a particular community the elderly may have a greater potential to flood loss, perhaps because they tend to live in single-storey homes, are physically less capable of moving damageable assets to save them from damage, and have health conditions which may easily be worsened by floods and the stress which they cause and because they have low incomes limiting their recovery capacity. In this case being elderly sets up both economic vulnerability (caused by the physical loss of property) and social vulnerability (caused by increased health risks). It is possessing the potential for economic loss which is economic vulnerability in this case. The social vulnerability of these elderly flood victims might then be further adversely affected if they have to be evacuated into dispersed temporary accommodation which loosens their social networks, so that they loose contact with those who provide them with physical and psychological support. It is possessing the potential for ill-health, psychological damage or loss of support networks which is social vulnerability in this case.

On the other hand, age maybe associated with economic and social resilience. For example where a largely physically-able, young and middle-aged community is sufficiently wealthy to have financial reserves which allow them to rapidly recover, say from flood damage, households rapidly adapt their homes by making them more resilient to future floods. Community spirit is enhanced by the common threat of the disaster event and the feeling that community members are 'in it together'. In these examples, vulnerability is directly concerned with potential for loss (economic, social), ability to recover (economic, social) and adapative capacity (economic, social). *Factors* are potential contributors to vulnerability, and they can help explain *vulnerability* (although caution needs to be exercised because social-economic factors are not necessarily sound predictors of social and economic vulnerability), but they are not the same thing as vulnerability. It is also necessary to be clear about the difference between the *consequences of vulnerability and vulnerability*. Consequences of vulnerability are the effects of extreme natural and na-tech events e.g. the damage they cause, the loss of life they cause (Figure 1). They are the post-event expression or indicator of vulnerability. Depending upon how they are measured, effects may or may not be a sound indicator of vulnerability. For example, it is not the damage which is caused by an event that amounts to vulnerability, but the degree of susceptibility or potential of say, buildings, to damage. It is not the monetary value of the loss which a household suffers in a disaster which measures vulnerability, but the significance of that loss to the underlying financial and economic 'condition' of that household given the socio-political and economic context in which it is positioned. Developing models which measure pre-event vulnerability in a way which strongly

accords with post-event indicators or expressions of vulnerability is likely to be particularly challenging, especially as vulnerability is likely to be significantly affected by location-specific variables.

Figure 1: Relationships between factors, vulnerability and consequences



In following paragraph we examine ways in which social scientists and economists have analysed or 'unpacked' vulnerability.

2 Approaches to the structuring of social vulnerability

There is no universally accepted definition of social vulnerability. However, a useful starting point is to view social vulnerability as a function of a) human capital, and b) social capital (Figure 3.2). Based upon this, and following wider reflection on the research and the review of this report, a suggested definition for social vulnerability could be as "the susceptibility to, or potential for, loss of human and social capital and the capacity to recover from these losses".

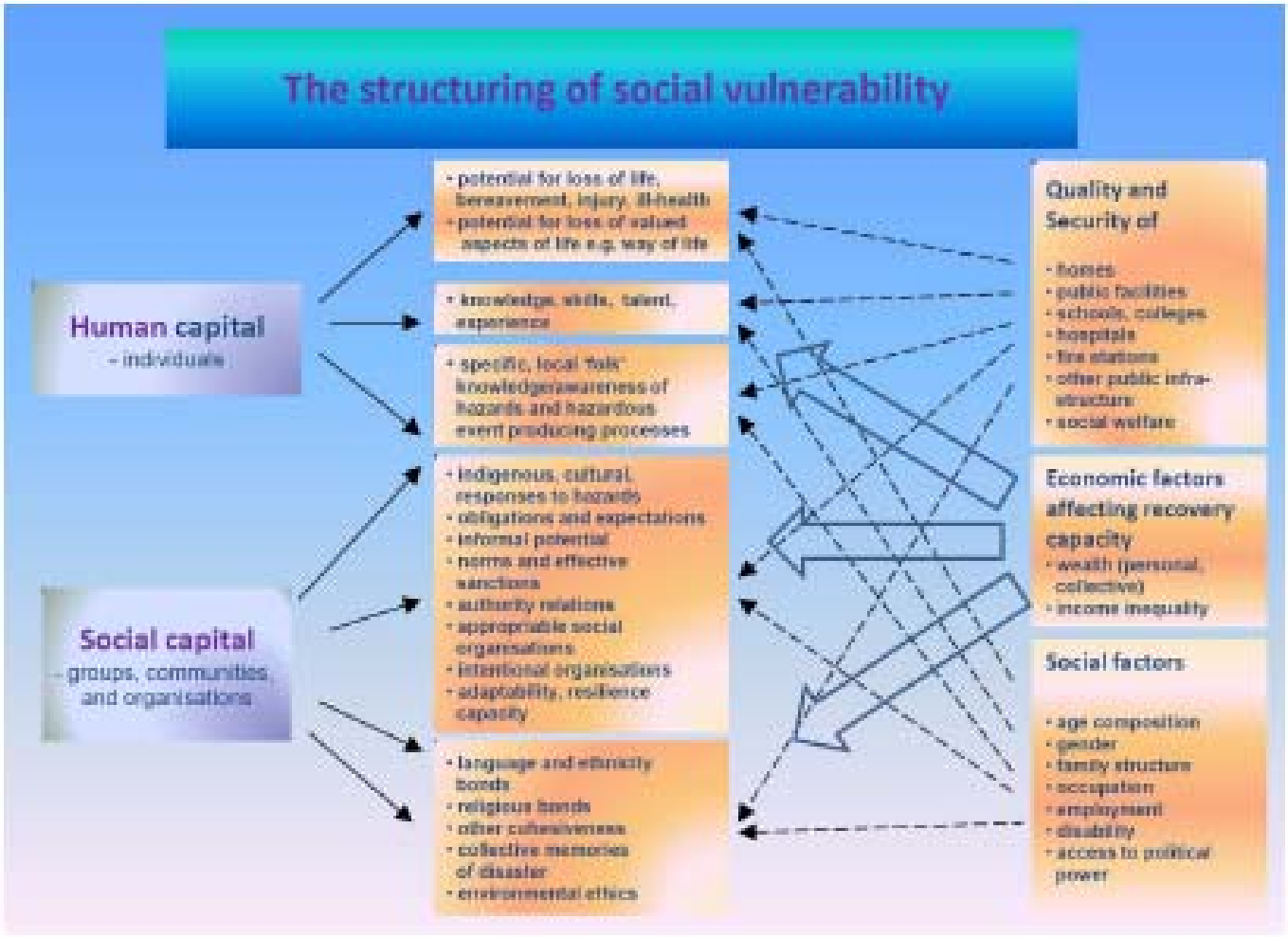
The origins of the concept of human capital can be traced back to Adam Smith's writings in the 18th century (Smith, 1776 (1977)) in which he identified the stock of skills and knowledge of

workers as an essential ingredient of the production process and the creation of wealth. The concept of social capital appears to have been introduced much later, in the early 20th century, and in the context of identifying the importance of community involvement for successful schools in West Virginia, USA (Hanifan, 1916).

Since their first usage, both terms have been defined and redefined many times so that there is no single definition which suffices. Essentially, Smith viewed human capital as skills, dexterity (physical, intellectual, psychological etc.) and judgement, and he believed that 'life' (i.e. experience) helped a great deal in acquiring these qualities, which could also be acquired through formal schooling and on-the-job training. Mincer (1974), the father of modern labour economics, provided pioneering empirical evidence that schooling and training was related to income in the United States. He and Becker (1964) held that investment in human capital (through education, training and medical treatment) could affect a human's output and their return on their investment. Subsequent definitions of human capital have variously emphasised the accumulated effect of ability (knowledge, skill and talent) plus behaviour x effort x time, and competence x commitment. It is also recognised that the knowledge that individuals acquire during their life can be used to produce goods, services or ideas in both market and non-market circumstances. Health, of more precisely ill-health, may well affect a person's ability to use their skills, and anything which degrades these abilities potentially contributes to increasing social vulnerability. In terms of natural or na-tech hazards and disasters, the level of knowledge and skill which exists in a disaster-prone community, which is in turn related to education and skills levels or investment in these, as well as to experience, may significantly affect its social or economic vulnerability, or both. Clearly, loss of population, particularly if it is skilled and experienced is likely to reduce the amount of human capital available to address hazards and extreme events. Such loss may occur through processes of depopulation or migration, or through loss of, or damage to, life.

Social capital has no clear, uncontested meaning, and there are almost as many definitions of the term as there are publications about it. However, essentially, social capital is about the value of social networks which affects the productivity and capability of individuals and groups (Figure 2). Close-knit communities are likely to be much less socially vulnerable in disasters than communities where ties have broken down or never existed in the first place. Anything which reduces a community's ability to develop collective, structurally-organised ways of dealing with natural and na-tech events is likely to increase social vulnerability. For example, if communication systems used in an emergency fail, this is likely to degrade the effectiveness of collective action and the benefits of support groups, and will increase the sense and reality of isolation when experiencing danger. Also anything which reduces the ability of a community to restore its socio-economic vitality is likely to increase its social vulnerability. Some writers emphasise that social capital is a function of trust, social norms, participation and networks (e.g. Nakagawa and Shaw, 2004). Dynes (2006) observes that social capital is not located in individuals, as is human capital, but rather it is embedded in social relationships and networks between and among members of a community. These relationships can be used to guide collective action in an emergency. In terms of natural or na-tech hazards and disasters, the degree of development of social capital which exists in a disaster-prone community is likely to affect a community's social and economic vulnerability, or both.

Figure 2: An approach to analysing social vulnerability combining ideas originating with Smith (1776), Hanifan (1916), Becker (1964), Coleman (1990), Blaikie et al. (1994), Granger et al. (1999), Dynes (2006) and Cutter (2006)



Based on the work of Coleman (1990), Dynes (2006) identifies six different forms of social capital beginning with obligations and expectations (Figure 2). Living in a community creates a network of obligations – to other family members and kin, to work colleagues, members of religious and other social groups, and to unknown community members. Individuals living in a community develop trust that their obligations will be repaid when they need help. These interconnections are built up over time and increase the resources available to all individuals involved when the need presents itself. Information is an important basis for action. Social relationships maintained for other purposes can be used when sudden and unexpected events occur. By interacting with others in the modern world, individuals can rapidly gain information from others. The communication of an emergency (e.g. through a warning message) signals that self-interested behaviour needs to be subjugated to the interests of the community. Norms define what needs to be done and they facilitate some actions and constrain others. When groups are organised to pursue specific goals a leader is often chosen to make decisions. This leader has access to an extensive network of capital that amplifies the social capital of individual members. Such a leader can volunteer the network to engage in specific tasks.

One outcome of social life is the creation of organisations for specific purposes. Most organisations can however be used for purposes other than those for which they were initially intended. A school can be used as a first aid station of an evacuation shelter, and so on. This allows a community to reallocate its efforts and to utilise its physical and human capital in different ways. As human communities have added complexity, organisations engaged in recurrent activities may be recognised as having value. In this way fire departments, emergency medical services, rescue services have become routinised and, through training, organisations have acquired specialised skills and innovations which are a further source of social capital which can be used in emergencies.

Figure 2 also builds on the work of Granger et al. (1999) who undertook a multi-hazard risk assessment for Cairns in Queensland, Australia. They identified security factors as being an important influence on social vulnerability which they believed is also deeply influenced by a variety of social factors such as social cohesiveness and social bonding systems (for example, those created by language, ethnicity and religion). Social vulnerability can thus be due to the extent (existence or lack) of human and social capital. Sapountzaki et al., (2009c) identify ten elements of social vulnerability which are closely reflected in Figure 2.

The particular style and level of development of social capital will vary from one territory and another, and in so doing will give rise to a dimension of territoriality. How a territory evolves its unique style and level of development of social capital will depend upon its culture and history. Investment in education, training and health is important in building up both human and social capital and, in turn, ability to continue to invest in these things will depend, at least in part, upon maintaining the security of public facilities which enable these activities.

Personal wealth and the wealth of territories (e.g. regions, nations) is one of the most important factors influencing social vulnerability (this influence is shown by the large arrows in Figure 2). Here lies one of the most important linkages between social vulnerability and economic vulnerability. Social vulnerability is likely also to be significantly influenced by income inequalities. Over time, societies or communities may well develop an income distribution which displays marked inequalities. Originally, income differentiation may be due in part to differences in skills and talents which allow some to accumulate more wealth than others, but marked differences in income may also arise from the effects of tax regimes, corruption, inheritance laws and systems of social and political privilege. In some societies, landowning classes subjugate landless labourers in ways which may increase their social vulnerability e.g. by punitive taxation systems, by limiting access to education and training, and by maintaining indebtedness (Blaikie et al., 1994). Cutter (2006) argues that the economic factors are the ones which most significantly affect resilience capacity and ability to recover from a disaster.

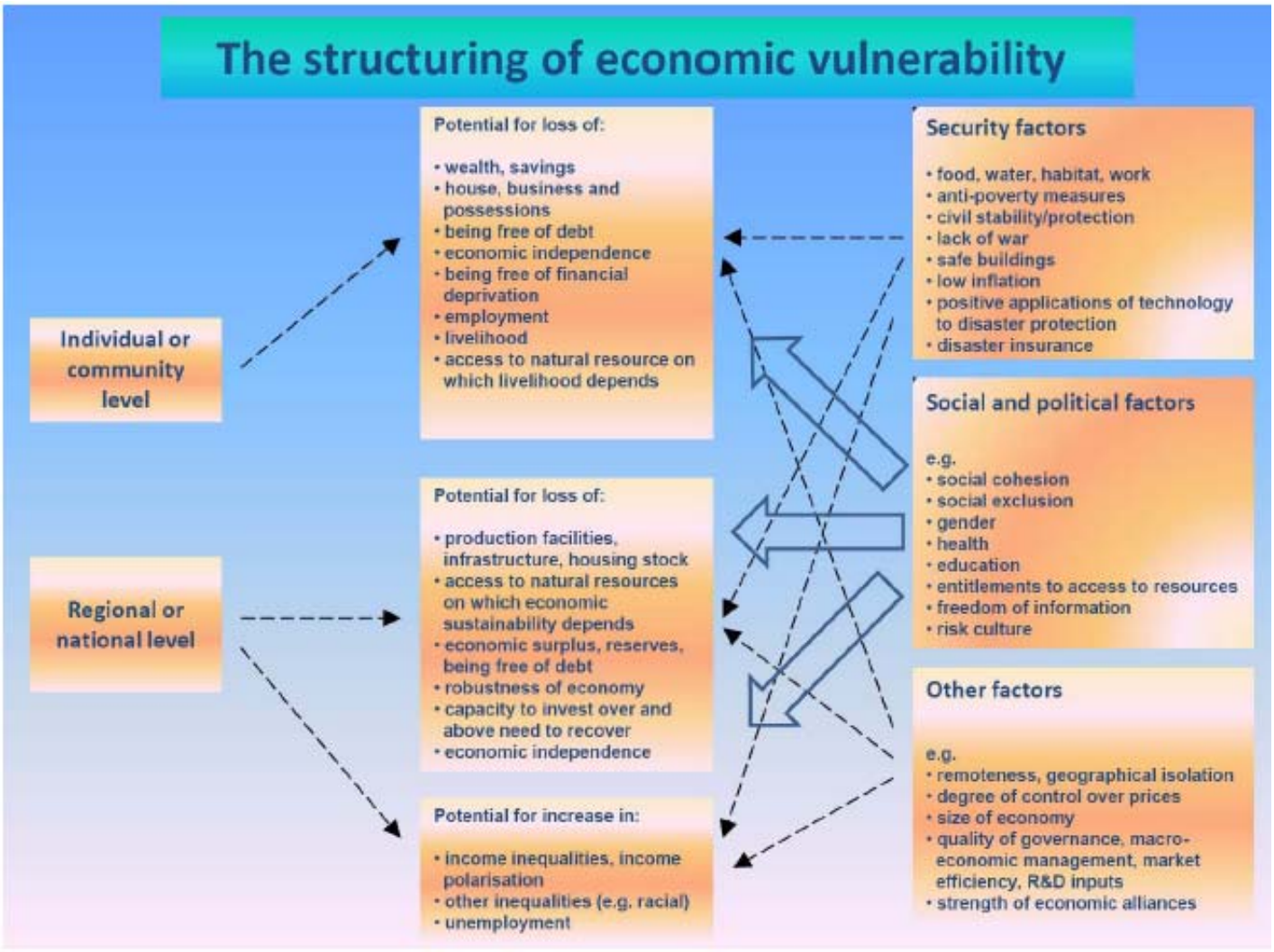
3 Approaches to the structuring of economic vulnerability

There is a considerable literature, already drawn upon to some extent in outputs from WP1, on economic vulnerability. This includes contributions on the vulnerability of the economies of

small island states (e.g. Briguglio, 1995) and the world's least developed countries to exogenous shocks; the development of economic vulnerability indices; sustainable livelihoods and vulnerability to disasters (e.g. Adger, 1999); the political economy of disasters (e.g. Blaikie et al., 1994) and a range of other research outputs including recent World Bank work on the vulnerability of countries to the global economic crises of 2008/09 (siteresources.worldbank.org/NEWS/…/WBGVulnerableCountriesBrief.pdf).

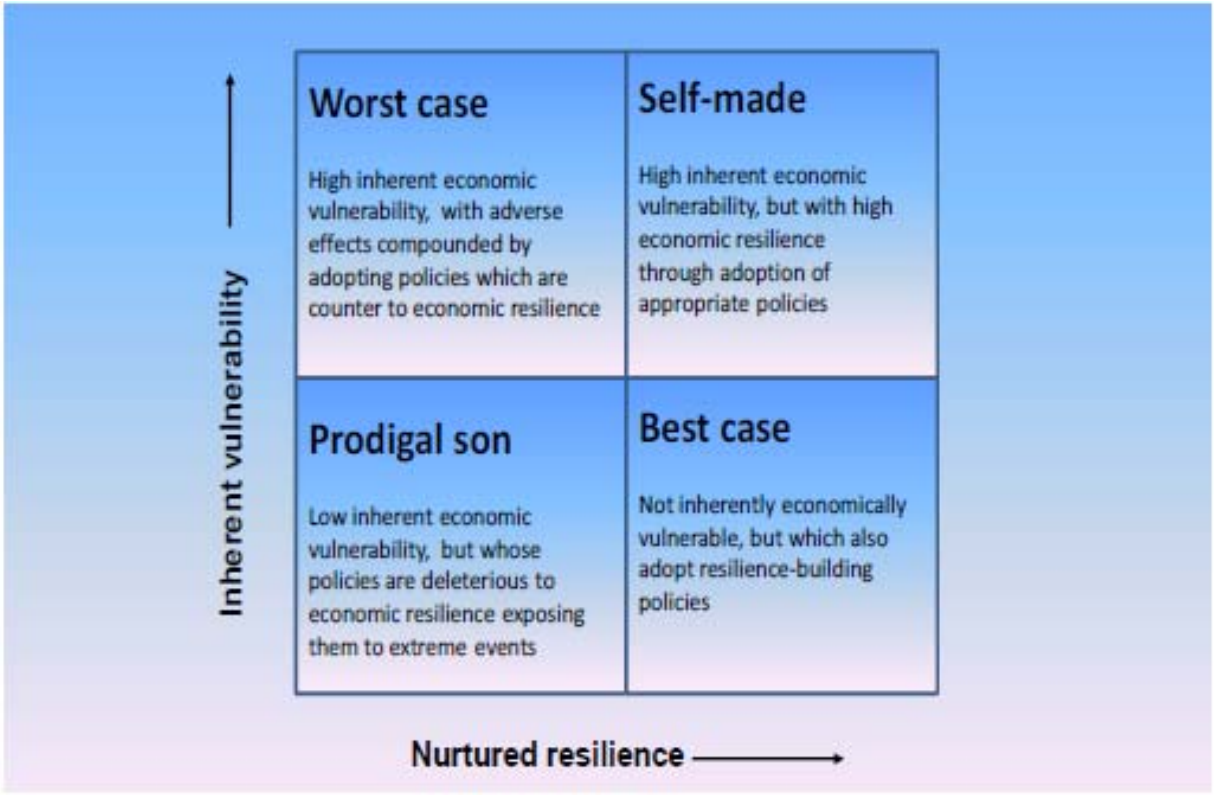
From these contributions it is possible to identify a large number of considerations and variables which might be used to 'structure' thinking about economic vulnerability to natural and na-tech hazards and disasters, and to address the inter-relationships which exist between social and economic vulnerability (Figure 3). Based upon these ideas, and following wider reflection on the research and the review of this report, economic vulnerability could be defined as "the susceptibility to, or potential for, loss of economic assets and productivity; the loss of the livelihoods these support and the wealth and economic independence they create; financial deprivation and debt dependence; and the capacity for recovering from these losses".

Figure 3: An approach to analysing economic vulnerability to disasters



Social and political factors are significant influences upon economic vulnerability (as shown by the large arrows in Figure 3) and here lies one of the closest links of economic vulnerability to social vulnerability. Most of the research focuses either upon the economies of countries (i.e. states) or upon the economic circumstances (i.e. financial capital) of individuals or households and, by comparison, relatively little appears to focus upon communities.

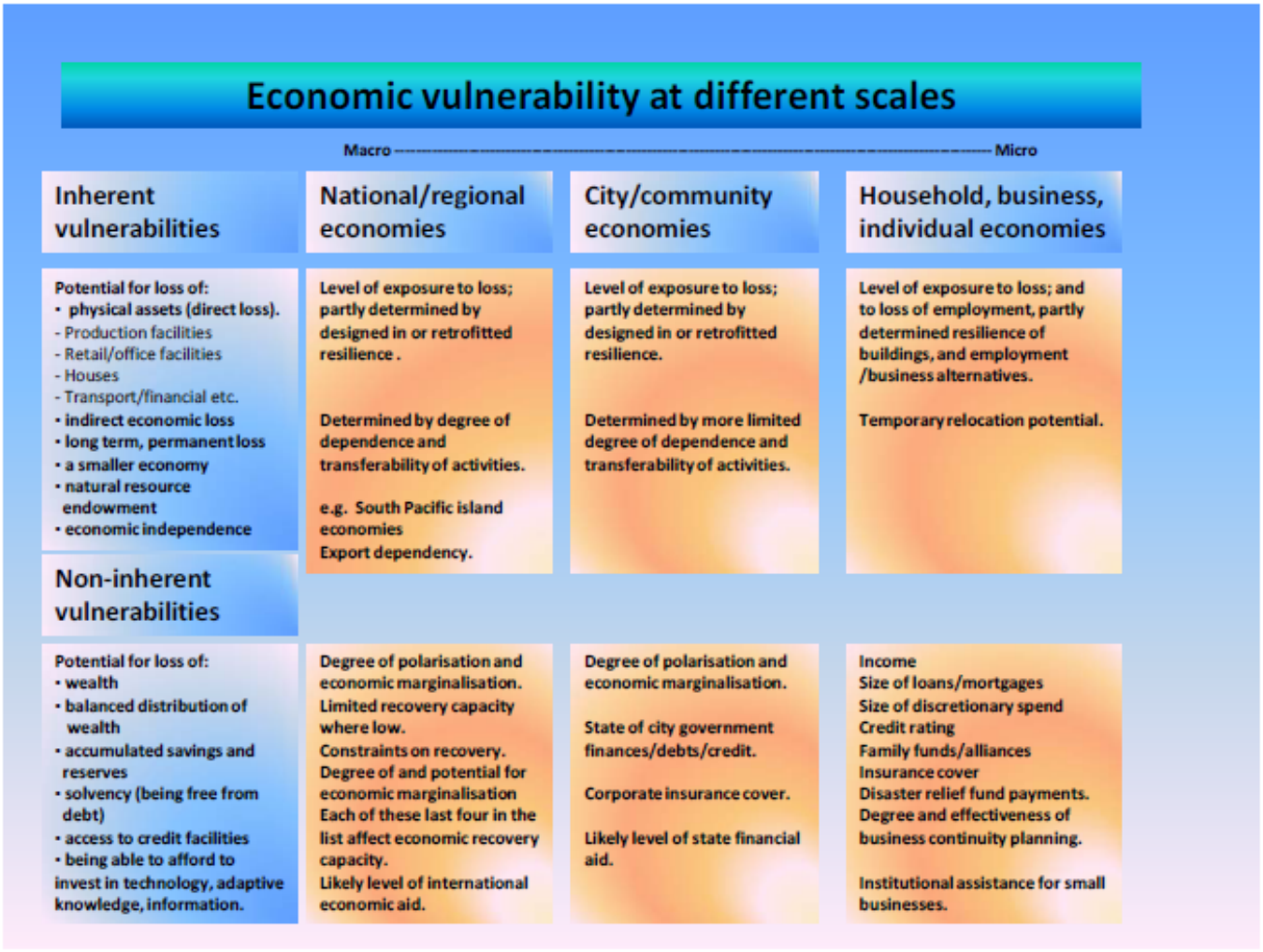
Figure 4: Briguglio et al.'s (2006) four scenarios method of defining vulnerability in terms of inherent features and resilience



Briguglio's research provides insights into the variables which are likely to influence, or structure, a state's economic vulnerability to economic shocks or disasters (Briguglio et al., 2006) . In their approach, economic vulnerability is ascribed to inherent conditions affecting a country's exposure to exogenous shocks, while economic resilience is associated with actions undertaken by policy-makers and private economic agents which enable a country to withstand or recover from the negative effects of shocks. Resilience is seen here as separate from, but also the antithesis, of inherent vulnerability. Briguglio et al. (2006) identify four possible scenarios into which countries may be placed according to their economic vulnerability and resilience characteristics (Figure 4). These scenarios are termed 'best case', 'worse case', 'self-made' and 'prodigal son'. Countries classified as 'self-made' are those with a high degree of inherent economic vulnerability and which are economically resilient through adoption of appropriate policies that enable them to cope with or withstand the effects of their inherent economic vulnerability. Countries falling into the 'prodigal son' category are those with a relatively low degree of inherent economic vulnerability but whose policies are deleterious to economic resilience, thereby exposing them to the adverse effects of shocks. The 'best case' category applies to countries that are not inherently vulnerable and which at the same time

adopt resilience-building policies. Conversely, the 'worst case' category refers to countries which compound the adverse effects of inherently high vulnerability by adopting policies which run counter to economic resilience.

Figure 5: An approach to analysing economic vulnerability by vulnerability type (i.e. inherent and non-inherent) and scale



'Inherent or permanent economic vulnerability' is likely to be generated by intrinsic features of a state's economy, such as a high degree of dependence on a narrow range of products which may be particularly susceptible to damage. The size of an economy (measured for example by GDP) may also be a key influence as smaller economies tend to be more prone to shocks than larger ones. 'Nurtured resilience', or the ability of an economy to bounce back from a shock, is policy induced. Some states have a high degree of nurtured resilience whereas others do not. Economic resilience is nurtured by good governance, sound macroeconomic management, market efficiency and social cohesion. States which maintain a limited fiscal deficit are in a better position to respond to the negative economic impacts of disasters, because they have scope to adjust taxation and expenditure policies to address these impacts. Similarly, countries with a high level of external debt will find it more difficult to mobilise resources to counter-act

the effects of disasters. Social development factors such as education and health are also likely to impact upon nurtured resilience. Socially or policy induced economic vulnerability can work in both positive and negative directions. Where policies nurture resilience they have a positive influence, but where they inadvertently reduce resilience and increase vulnerability they are negative.

To apply the concepts of inherent and non-inherent economic vulnerability it is necessary to distinguish between these vulnerability types (Figure 5). Figure 5 also analyses vulnerability by scale. Most aspects of economic vulnerability appear to be capable of being manipulated and changed in a positive direction by concerted human action. But, ultimately, however much education and training a human being is given, the inherent physical and bio-chemical characteristics of the human brain and body limit what a human being can achieve in terms, say, of economic productivity. Similarly, the productivity of soil found in a state may ultimately pose limits on the productivity of that soil (although may well be possible at a cost to import soil from another state). There is now considerable concern about the future availability of freshwater resources in many parts of the world (e.g. Australia) which is already placing some limits on economic growth. As at least some inherent aspects of economic vulnerability might be transformed into non-inherent ones through applications of technology, we define inherent economic vulnerability here as contingent upon cost.

To some extent research into vulnerability to disasters focuses upon the economic vulnerability of individuals, and to some extent groups of individuals (e.g. Adger, 1999; Brooks et al., 2005). Such research also illuminates, to a degree, the way in which social factors and vulnerabilities interact with economic ones. Poverty, maldistribution of wealth, and institutional variables are major determinants of economic vulnerability. Common to many of these approaches is the access model. Access to resources is viewed as a key variable in maintaining livelihoods and access is always based on social and economic relations (including the social relations of production, gender, ethnicity, status and age). Access varies greatly between individuals and groups and this affects their economic vulnerability to disasters. Those with better access to information, cash, means of production, equipment and social networks are less economically vulnerable and are generally able to recover more quickly from disaster. Blaikie et al.'s (1994) pressure-release model identifies 'unsafe conditions' or a lack of security as key variables in structuring economic vulnerability. Here, unsafe conditions include fragile local environments (including non-resistant public and private buildings) and fragile local economies (e.g. ones with high rates of inflation resulting in income becoming worthless). Food, water, habitat (e.g. homes) and work security are all identified as underpinning economic resilience. Brooks et al. (2005) take the security analysis further by showing how places with low capacity to adapt are often made so by war and civil strife and the breakdown of governance. Sustainable livelihood approaches focus on analysing poor people's livelihoods where a livelihood comprises capabilities, assets (material and social) and activities required for a means of living. A livelihood is sustainable if it can cope with and recover from stresses and shocks of the kind presented by disasters while not undermining the resource base.

A recent attempt to understand economic vulnerability to disasters has been made by the International Federation of Red Cross and Red Crescent Societies which hosts the Provention Consortium (www.proventionconsortium.org/themes/default/pdfs/AG/096MEX.pdf). This work identifies many of the factors and research outputs discussed above. In addition, it identifies

information availability as having a key role in economic vulnerability. Better informed economic agents are more able to identify their risk and to take better decisions. The prevailing risk management culture and capacity in a country is viewed as also crucial in reducing economic vulnerability.

The closeness of the relationships between social and economic vulnerability means that it is very unusual to find cases which only demonstrate a one-way relationship as postulated above for the purpose of analysing (i.e. structuring) each of these types of vulnerability. In reality these types of vulnerability have a symbiotic relationship (i.e. they reside together) almost as an inseparable duo. The case studies below exemplify this kind of symbiotic relationship and examine the relationships as two-way ones seeking to unpick exactly how one affects the other.